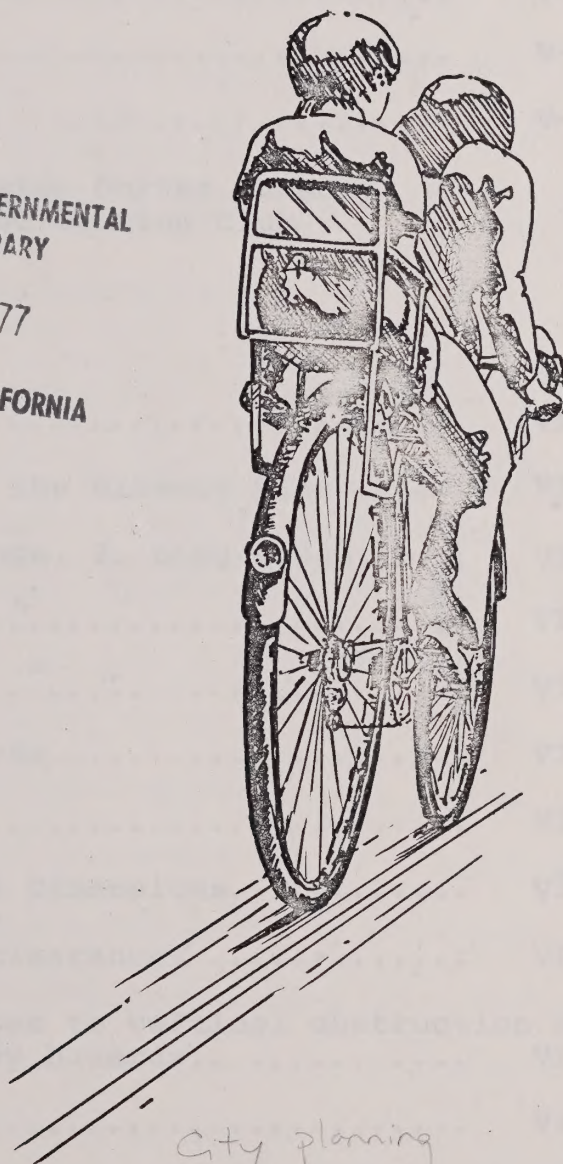


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LOMPOC BIKEWAYS PLAN



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City planning Lompoc
Traffic Bicycles "

PREPARED BY THE COMMUNITY DEVELOPMENT DEPARTMENT IN
CONJUNCTION WITH THE LOMPOC BIKEWAYS PLANNING COMMITTEE.

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TABLE OF CONTENTS

	<u>PAGE NO.</u>
I. Summary.....	I-1
II. Title Page	II-2
III. Introduction.....	III-1
IV. Definitions	IV-1
V. Lompoc and the Bicycle.....	V-1
a. Types of Cycling.....	V-1
b. User Surveys.....	V-3
1. Survey I, City-wide Survey Summary	
2. Survey II, Lompoc Touring Club	
c. Lompoc Land Use.	
d. Maps.	
VI. Some Future Thinking.....	VI-1
a. The Assumptions of the Bikeway Plan.....	VI-1
b. Goals; 1, Short Range, 2. Long Range.....	VI-2
c. Objectives.....	VI-2
VII. Design Criteria.....	VII-1
VIII. Bikeway Design Standards.....	VIII-1
a. Design Speed	VIII-1
b. Bicycle and Cyclist Dimensions.....	VIII-1
c. Bikeway width and clearances	VIII-1
d. Horizontal clearances to vertical obstruction and other static bikeway hazards.....	VIII-4
e. Grade.....	VIII-4
f. Radius of Curves.....	VIII-5
g. Bikeway Surface, Base and Subgrade.....	VIII-6
h. Drainage.....	VIII-7
i. Bikeway Design Capacities.....	VIII-7

j.	Provision of Class II and III Bikeways on Existing Streets.....	VIII-8
k.	Existing and Future Street Widths, Bikeway Placement and Street Design.....	VIII-14
l.	Bikeway Signing.....	VIII-23
	1. Standard signs.....	VIII-23
	2. Sign Placement.....	VIII-24
	3. Warning Signs.....	VIII-24
m.	Lane Markings.....	VIII-29
n.	Intersections on Streets.....	VIII-31
	Summary of Bikeway Signing and Marking Standards.....	VIII-34
o.	Facilities, Existing and Proposed.....	VIII-35
	1. Parks and Playgrounds.....	VIII-35
	2. Utilities and other easements.....	VIII-37
	3. Existing and Proposed Bikeways.....	VIII-37
	4. Existing and Proposed Parking.....	VIII-38
	5. Traffic Controls.....	VIII-43
	6. Travel Amenities.....	VIII-44
IX.	The Lompoc Bikeway Plan.....	IX-1
	a. County Plans.....	IX-1
	b. State Plans.....	IX-1
	c. Lompoc Bikeway Plan - The Backbone Route.....	IX-1
	d. Maps.....	
	e. Explanation of Backbone Route.....	IX-5
	f. The Long Term Planning Program.....	IX-7
X.	Funding.....	X-1
	a. Allocation of the Local Transportation Development Act of 1971 (SB 325).....	X-1
	b. Local Funding Sources.....	X-1
	c. Backbone Plan Costs.....	X-3
	d. Implementation Recommendations.....	X-6

<u>FIGURE NO.</u>	<u>TITLE</u>	<u>PAGE NO.</u>
VIII-17	Class II alternative on recommended major arterial street width.....	VIII-22
VIII-18	Signing plan for beginning and end of a Class I bikeway.....	VIII-26
VIII-19	Signing plan for beginning and end of a Class II bikeway.....	VIII-26
VIII-20	Intersection signing plan: Class II Bikeway crossing a non-bikeway street....	VIII-27
VIII-21	Intersection signing plan: Two Class II bikeways at a road intersection.....	VIII-27
VIII-22	Lane markings for bikeways - Type I.....	VIII-29
VIII-23	Lane markings for bikeways - Type II.....	VIII-30
VIII-24	Class I bikeway lane markings and transition bikeway Xing markings.....	VIII-31
VIII-25	Class II bikeway marking at intersection of collectors or minor streets.....	VIII-32
VIII-26	Bikeway alignment and right and left hand turn lanes on major arterials.....	VIII-33
VIII-27	Curb cut for entry from a head on position.	VIII-36
VIII-28	Curb cut for entry from a 90° angle.....	VIII-36
VIII-29	"Rally Rack" advertisement.....	VIII-40
VIII-30	"Rally Rack" advertisement.....	VIII-41
VIII-31	"Rally Rack" advertisement.....	VIII-42
IX-1	Route descriptions.	
IX-2	Design alternatives.	

Page No.	Title	Page No.
100-10	Class 10: Introduction to the subject	100-10
100-11	Class 11: The subject and its scope	100-11
100-12	Class 12: The subject and its scope	100-12
100-13	Class 13: The subject and its scope	100-13
100-14	Class 14: The subject and its scope	100-14
100-15	Class 15: The subject and its scope	100-15
100-16	Class 16: The subject and its scope	100-16
100-17	Class 17: The subject and its scope	100-17
100-18	Class 18: The subject and its scope	100-18
100-19	Class 19: The subject and its scope	100-19
100-20	Class 20: The subject and its scope	100-20
100-21	Class 21: The subject and its scope	100-21
100-22	Class 22: The subject and its scope	100-22
100-23	Class 23: The subject and its scope	100-23
100-24	Class 24: The subject and its scope	100-24
100-25	Class 25: The subject and its scope	100-25
100-26	Class 26: The subject and its scope	100-26
100-27	Class 27: The subject and its scope	100-27
100-28	Class 28: The subject and its scope	100-28
100-29	Class 29: The subject and its scope	100-29
100-30	Class 30: The subject and its scope	100-30
100-31	Class 31: The subject and its scope	100-31
100-32	Class 32: The subject and its scope	100-32
100-33	Class 33: The subject and its scope	100-33
100-34	Class 34: The subject and its scope	100-34
100-35	Class 35: The subject and its scope	100-35
100-36	Class 36: The subject and its scope	100-36
100-37	Class 37: The subject and its scope	100-37
100-38	Class 38: The subject and its scope	100-38
100-39	Class 39: The subject and its scope	100-39
100-40	Class 40: The subject and its scope	100-40
100-41	Class 41: The subject and its scope	100-41
100-42	Class 42: The subject and its scope	100-42
100-43	Class 43: The subject and its scope	100-43
100-44	Class 44: The subject and its scope	100-44
100-45	Class 45: The subject and its scope	100-45
100-46	Class 46: The subject and its scope	100-46
100-47	Class 47: The subject and its scope	100-47
100-48	Class 48: The subject and its scope	100-48
100-49	Class 49: The subject and its scope	100-49
100-50	Class 50: The subject and its scope	100-50

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XI.	Ordinance Revisions	XI-1
a.	Subdivision Ordinance.....	XI-1
b.	Zoning Ordinance.....	XI-1
c.	General Plan	XI-1
d.	City Bicycle Ordinance.....	XI-1
XII.	Survey I - City Wide Survey Summary.....	XII-1

TABLE OF FIGURES

<u>FIGURE NO.</u>	<u>TITLE</u>	<u>PAGE NO.</u>
VIII-1	Single lane bikeway minimum widths and clearances.....	VIII-2
VIII-2	Minimum width for 2 lane bikeways, same directional traffic flow.....	VIII-3
VIII-3	Directional traffic flow.....	VIII-3
VIII-4	Present status of bicycle traffic on roadway.....	VIII-9
VIII-5	Class III alternative for bikeway placement.	VIII-10
VIII-6	Class II alternative, removal of on-street auto parking for separated bikeway.....	VIII-11
VIII-7	Class II alternative; development of separated bikeway between parked car and outside moving vehicle lane.....	VIII-12
VIII-8	Class II alternative, separation of bikeway by planter or median strip.....	VIII-13
VIII-9	Class III alternative on existing 40 ft. street.....	VIII-14
VIII-10	Class II alternative on existing 40 ft. street with removal of parking on one side only.....	VIII-15
VIII-11	Class II alternative on recommended minor street width.....	VIII-16
VIII-12	Class III alternative on existing 44 ft. street.....	VIII-17
VIII-13	Class II alternative on existing 44 ft. street.....	VIII-18
VIII-14	Class II alternative on existing 55 ft. street.....	VIII-19
VIII-15	Class II alternative on recommended collector street width.....	VIII-20
VIII-16	Class II alternative on existing 64 ft. street	VIII-21

PART II - TITLE

THIS PLAN HAS BEEN PREPARED
BY THE
COMMUNITY DEVELOPMENT DEPARTMENT OF THE CITY OF LOMPOC
IN COOPERATION WITH
LOMPOC BIKEWAYS PLANNING COMMITTEE.

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PART III - INTRODUCTION

A brief history of the rise of the bicycle as a transportation mode.

The early years of bicycling were more or less dedicated to the recreational or "toy like" aspects of the vehicle. For example, the "ordinary" had a six foot diameter drive wheel and necessitated a step ladder in mounting as well as a relatively soft spot of ground for landings. A few years later in the 1870's, the "safety bicycle" was produced sporting two wheels of equal diameter (about 3 foot). With new developments such as chain drive, diamond frame, rubber tires, foot brakes, and handlebars, more people were able to enjoy the speed and thrills of riding the bike. By 1900, over 1.8 million bicycles were sold throughout the world.

Early in the 1900's the bicycle was used for quite practical purposes. During World War I, both sides of the conflict used a folding type bicycle for messengers, to carry troops to the front lines, and two accounts of one fiery battle waged from bicycles and horseback were recorded.

It was during this period of time in Europe when the bicycle established its first recognition as a viable mode of personal transportation. Material shortages were hampering the automobile's development in Europe as a strong transportation mode. Much of the transporting of goods and materials was made by river barge and horsedrawn wagon. People did discover that with proper gearing the bicycle could haul small loads; enough to get produce to village and town markets and pull wagonloads of grains and flour. The use of sacks, wicker baskets, carts and small wagons tied to the bicycle relieved slightly the problems of trading among local establishments.

It was after the first World War that the bicycle in Europe began a greater use. Many areas of Europe were concentrating their industries and new urban centers were developing. The European automobile was far behind that of the United States in shaping the urban pattern. The common man had not the resources available to own an auto, but a bicycle could often be managed. This growth in the use of the bicycle for work and marketing use spurred many refinements in the structure of the bicycle itself. The further refinement of gear ratios, the development of a gear shift mechanism, reduction of bulk weight and the increase in speed capability made the bicycle a highly used source of personal transportation throughout much of Europe.

Such was the impact of the bicycle that in many industrial cities, laws regulating the use of the bikes on city streets had to be provided. In some German cities it was illegal to hit a pedestrian

or livestock and if such an event occurred that livestock was killed or substantially injured, fines could be levied against the cyclist. The same courtesy was often given to public officials or skilled workers in major industrial plants if they were injured and could not work. Some cities adopted maximum speed laws where narrow and winding streets would not allow the mixing of high speed bicycles with pedestrian and slow horse drawn traffic. Hand signals for turning and stopping were developed in a few major cities. A few towns even provided separate facilities for bicycle traffic which minimized pedestrian, bike and other vehicle conflicts.

Following the second World War, Europe again picked up the bicycle but with a different outlook on transportation. Europe had been brought into the new transportation age by a rapid expansion of rail service, development and use of large airplane capabilities, and the shift of military vehicle plants to standard automobile plants. Autos were being produced in Sweden, Germany, Belgium, Italy and England at a pace never before seen. The general economy was rising and the above average worker could come closer to the purchase price of an automobile. For the average worker though, public transportation, bicycles and the soles of one's own shoes were the rule. As a result of the quick change to an urban economy former peasant classes were moving from the farm to urban areas to seek jobs in vast numbers. Bicycle sales boomed as quickly as the rise in urban employment. New and redeveloping European cities were master planning at high levels of sophistication for all of the various transport modes, including the bicycle. For example, the bicycle was found to be an integral part of the work commute force as residential areas began to spread away from the central industrial core. Bike lanes were often provided along roadways offering the shortest work-home commutes or separate bike paths were provided off and away from the established auto dominated roads. Bike routes in core areas were often placed on pre-existing streets and limited to bike traffic only.

School and shopping trips were also afforded the cyclist by separate bike paths from residential concentrations to the different activity centers.

Regional and cross country cycling was afforded greater advance by the development of the "autobahns" and similar high speed roadways. Systematic development of bikeways and autobahns as units afforded the cyclist with the fastest and most direct routes linking urban areas throughout most of Northern Europe.

During the bicycle boom, the bike itself achieved marked improvements which dynamically increased its range and speed capability. Complex gear change systems allowed for its use in most terrains as well as speeds up to 30+ mph for long, flat distances.

Presently, the bicycle in Europe has attained a prominent place in the European transportation ethic. Most European countries have found the bicycle an indispensable part of their daily routine. While there seems to be a rapid rise in the use of the automobile, it must be pointed out that bicycle use is also on the increase. Many places in Europe are further developing the potentials of personal transportation and bicycle use will play an important role.

THE AMERICAN EXPERIENCE

In the United States since the end of World War II the automobile has developed into the primary personal transportation mode. The ability of the American auto industry to rapidly mass produce and distribute to an increasingly urban society provided the force which changed the character of the American urban field. The mobility the auto provided gave rise to suburbia, connected to the highly industry and business oriented cores by ribbons of concrete. Consequently, bicycles have generally assumed the recreational level and child's personal transport mode level in American transportation ethic. Utilitarian uses for the bicycle have, in the past, been almost non-existent. It has been only within the past few years that the American adult was seen on a bicycle. In part, the reason for this vision could be the result of the American being told he is flabby and out of shape. He has been confronted with statistics showing the incidence of heart trouble and other ailments due to inactivity and gluttony. The American adult began to respond to this in the late 1960's by taking up a wide variety of activities including the bicycle. One of the easiest physical activities to master is how to ride a bicycle. Once you learn to stay on, the rest is easy.

However, there is a new found mobility in the American urban field that is beginning to change the shape of transportation and the urban field itself. Once the adult found that he could enjoy riding a bicycle on the weekends, he began thinking of the other possibilities.

There exists a small but growing group of people who found that riding a bicycle to work was not bad at all, (if the commute was between 1/2 mile to about five miles of relatively flat terrain, had a fairly direct route with few stops and tolerable traffic levels, and the weather was not extremely adverse). Gas wasn't being expended, the body was getting some badly needed exercise and the need for an extra automobile was sometimes greatly diminished.

Presently, in many suburban and isolated urban areas, the short commute is being infiltrated by growing numbers of cyclists who have changed the shape of their communities with bike paths giving direct, safe and speedy access to the work centers. Bike racks and stalls have been constructed in a number of industrial

parks to provide at least minimal terminal type facilities and one industrial concern has installed an executive bike rack with key locking mechanisms. The trend in the short commute to work is not an easily illuminated trend and is subject to many factors which affect other forms of transportation. Such problems as gasoline costs and shortages, the rising costs of auto ownership, the inflexibility of transit systems, and the like may see a greater more permanent movement in the direction of the bicycle.

The shopper is not an easy group to bring to the use of the bicycle. American shopping centers are designed for the convenience of the motorist. Bicycles are not designed specifically to carry large loads of groceries and the various sizes and weights of potential purchases. The shopper-cyclist is usually a child, teenager or single person whose purchases can easily fit on a bike-mounted basket or package rack. This cyclist has also grown in numbers, but is not necessarily a result of a change in preference of transport mode. With more children being brought into the population annually this type of cyclist will increase and has increased proportionately. Many changes in the structure of the bicycle will have to be made before larger numbers of shoppers will use it, and this will have to be aided by provisions of adequate bike terminal facilities and convenient bikepaths to these commercial areas.

The student movement in the United States has been responsible for many new trends and many changes in how we view our lives and the world around us. The beginnings of the United States bicycle boom was in part, born and nurtured by college students whose sole source of transportation was two wheels. As colleges and universities grew, greater number of bicycles were seen. Issues such as air pollution and general environmental health arose and even greater numbers of students used bicycles. Whole college communities began to examine their transportation structure and some made changes to allow for greater bicycle orientation. The City of Davis, California is a most outstanding example in that they have provided for bike travel through the campus of the University as well as the entire community.

Other cities have examined the potential to link schools and residential areas with community activity centers where bike traffic is the heaviest. Some urbanizing counties have provided bike trails linking urban activity centers with residential development. There are many cities and counties examining the potentials for bike-ways and many new plans will be developed. Funds are becoming available from State sources to provide alternatives to the automobile, and bicycle use is included.

Generally, the bicycle will provide both a problem and an asset to the urban transportation scene. If cities and counties can develop similar kinds of development policies afforded other modes of transportation, the problems of bike traffic on public rights-of-way will be greatly diminished.

PART IV - DEFINITIONS

"Bikeway" is used to define all facilities that explicitly provide for bicycle travel. It can mean anything from fully grade separated facilities to simple signed streets. There are three classes of bikeways which are defined as follows:

Class I: A completely separated right-of-way designated for the exclusive use of bicycles. Crossflows by pedestrians and motorists are minimized.

Class II: A restricted right-of-way designated for the exclusive or semi-exclusive use of bicycles. Through-travel by motor vehicles or pedestrians is not allowed, however vehicle parking may be allowed. Cross-flows by motorists, for example to gain access to driveways or parking facilities, is allowed; pedestrian crossflows, for example to gain access to parking facilities or associated land use is allowed.

Class III: A shared right-of-way designated as such by signs placed on vertical posts or stencilled on the pavement. Any bikeway which shares its through traffic right-of-way with either or both moving (not parking) motor vehicles and pedestrians is considered a Class III bikeway.

Utility cyclist or utility trip is generally destination oriented. The utility value of a route, or how fast the cyclist can get from point A to point B is the most important aspect of the utility oriented cyclist activity.

Recreational cycling differs in that the trip itself is the most important in terms of recreational activity, exercise value, scenic and aesthetic quality.

PART V - LOMPOC AND THE BICYCLE

A. Types of cycling.

The purpose of the cyclist is a major factor in cyclist behavior evaluation and planning corresponding facilities needs. The two important distinguishing classes of riding are recreational and utility oriented.

Recreational cycling includes many secondary purposes such as visiting friends, sightseeing (touring), physical exercise and health, and racing.

Neighborhood riding and visiting friends is generally done by children. It is characterized by a short radius of cycling activity with one or a few numbers with play rather than purpose in mind, and unpredictable behavior. Design of bikeway facilities for this group of cyclists is virtually impossible, however increased safety can be enhanced by developing conducive traffic design for neighborhood areas.

Touring cyclists are generally weekend riders and have less impact on the development of bikeways within the urban area of the Lompoc Valley than other forms of cycling. However, touring and sightseeing by bike can be afforded some facility in Lompoc by utilization of many of the aesthetic and historical features which are located quite near to or within the city limits.

Physical exercise for the health and well being of the body is a growing recreational related activity and many are exercising by bicycle. Cardio-vascular disease is presently the largest cause of death in the United States with over 50% of the annual death rate attributed to it. Many medical specialists in the field have recommended regular physical exercise and the use of the bicycle is usually on the top of their list of activities. Most of this kind of activity is conducted on urban streets in the Lompoc area and on immediately surrounding county roads. Bikeway facilities will be affected by the increasing number of people concerned for their health and using bicycles for exercise. Again, the routing should give the user a pleasurable experience while meeting his exercise needs.

Racing is generally practiced by a small number of experienced cyclists (although many people won't turn down a little challenge) who desire loop courses with very smooth pavement surfaces with virtually no pedestrian and auto conflicts. While provisions for this kind of facility are generally beyond the scope of utility - general recreation facilities, it could be incorporated into some aspect of local recreation planning.

While recreational cycling is generally a fair weather, daytime activity, a surprising number of utility cyclists ride through the night and in inclement weather periods. Utility cycling is not limited in many other respects as well. The utility cyclist is found in the heaviest of traffic conditions, often riding on high speed roads and taking more frequent trips than recreational cyclists. The most common utility uses include school, work, shopping and service item related trips.

School oriented trips are generally attributed to children and young adults. Their purpose is highly comparable to that of a working adult in that the fastest form of transportation available will be utilized. This group of cyclists make up the largest user groups in Lompoc. The routing of bikeways will have to respond generally to this use by routing near or to the school sites.

The cyclist who rides to work is not as limited as most would assume. In Lompoc, according to the census of 1970, over 230 people ride to work quite frequently or more often than they use other means. While these cyclists are in the minority, their group is growing steadily as costs of owning and operating the automobile rise. Routing provisions can be made to give minimum access to those areas where employment is high.

The shopper is a mixture of people in Lompoc. Few adults use the bicycle for major shopping trips, while most of the youth groups depend primarily on bicycles and walking for transport to commercial areas. The commercial activity areas will necessarily be served, but not as a primary function of the routing.

There are a number of services such as medical, legal, etc. which can be frequented by cyclists. These services are located in most of the areas of commercial import and can be served similarly.

2. Survey II, Lompoc Touring Club.

This survey utilized a map and coding system providing trip generation and attraction data from the respondents by trip purpose (i.e. work, shopping, school, recreation, etc.) and by zone of origin and destination. The survey also broke down the following characteristics of the users by the following characteristics:

- a. Bicycle ownership.
- b. Age.
- c. Home ownership.
- d. Length of residence.
- e. Employment status and occupation.
- f. Automobile ownership.
- g. Family income levels.
- h. Frequency of bicycle use.

It was generally found that the average size families responding to the survey owned as many bicycles as automobiles, while single adults own one more bicycle than autos owned. The average age of the respondents was twenty three with a range of response from 12 to 50 years. Of those respondents who were students, most of those responding had part or full time jobs and used bicycles to ride to work and school. Of those respondents who were age 18 or older, 12% rode bicycles for general transportation including work and shopping, 25% rode occasionally for such purposes, and 50% rode at least once a month for same. Occupations were broken down as follows:

- 30% were students.
- 25% were "white collar" workers.
- 23% were "blue collar" workers.
- 22% were service oriented business people.

Family income levels were generally consistent with the averages established for the Lompoc Valley by the 1970 census with an overall average of \$11,000, but a range of \$2,000 to \$25,000 annual income was reported. It appeared that middle income users owned the majority of the bicycles per capita, but both the lower and upper income groups were close behind with similar ownership characteristics.

The generation and attraction data obtained pointed heavily in a few areas of the city while some of the rest of the city had scattered responses in terms of trip attraction. The commercial area on "H" Street between Maple and North Avenues was the most heavily responded to in terms of utility trip attraction, while Ryon Park was the most heavily responded to for recreational trip attractions. Work oriented responses held no particular pattern. School, physical exercise, recreation (other than park), and visiting friends had some patterns, but were closely associated with area of trip generation.

B. The user surveys.

There were two user surveys distributed to groups in the Lompoc Valley. The survey with the largest distribution was distributed through the mail as an insert to the monthly city utility billing. This survey was used to assess general user rates for the Lompoc Valley as well as general rider and non-rider characteristics. The desirability of bikeways within the community and the willingness of the public to have public funds appropriated for such a use was ascertained.

The second survey was given to a small number of individuals who comprise the local bicycle touring club in an effort to understand the most avid local users characteristics in terms of bicycle use. More sophisticated information was obtained from the second group surveyed than from the first which enabled a more detailed examination of potential routing and types of facilities warranted by present and future bicycle use.

1. Survey I, City wide survey summary.

There was also data gathered on the streets generally used by the respondents and the following is a summary of that information.

Table

<u>STREET NAME</u>	<u>NO. OF PEOPLE WHO USE IT</u>	<u>NO. TIMES MENTIONED</u>
Ocean	10	18
"H"	8	15
College	8	16
Walnut	4	12
Pine	4	8
North	3	7
Olive	3	6
"I"	2	6
"O"	2	6
Cypress	2	6
"A"	2	3
Central	2	2
"V"	1	2
Seventh	1	1

There were also a number of individual places specified as destinations of the cyclists. In order of highest to lowest response they are: Ryon Park; La Purisima Mission, Vandenberg Village, Mission Hills, Surf Beach, Solvang, Vandenberg AFB, Santa Rosa Road, La Salle Stables, City Library, Buellton, Grefco, and Jalama Beach.

C. Lompoc land use

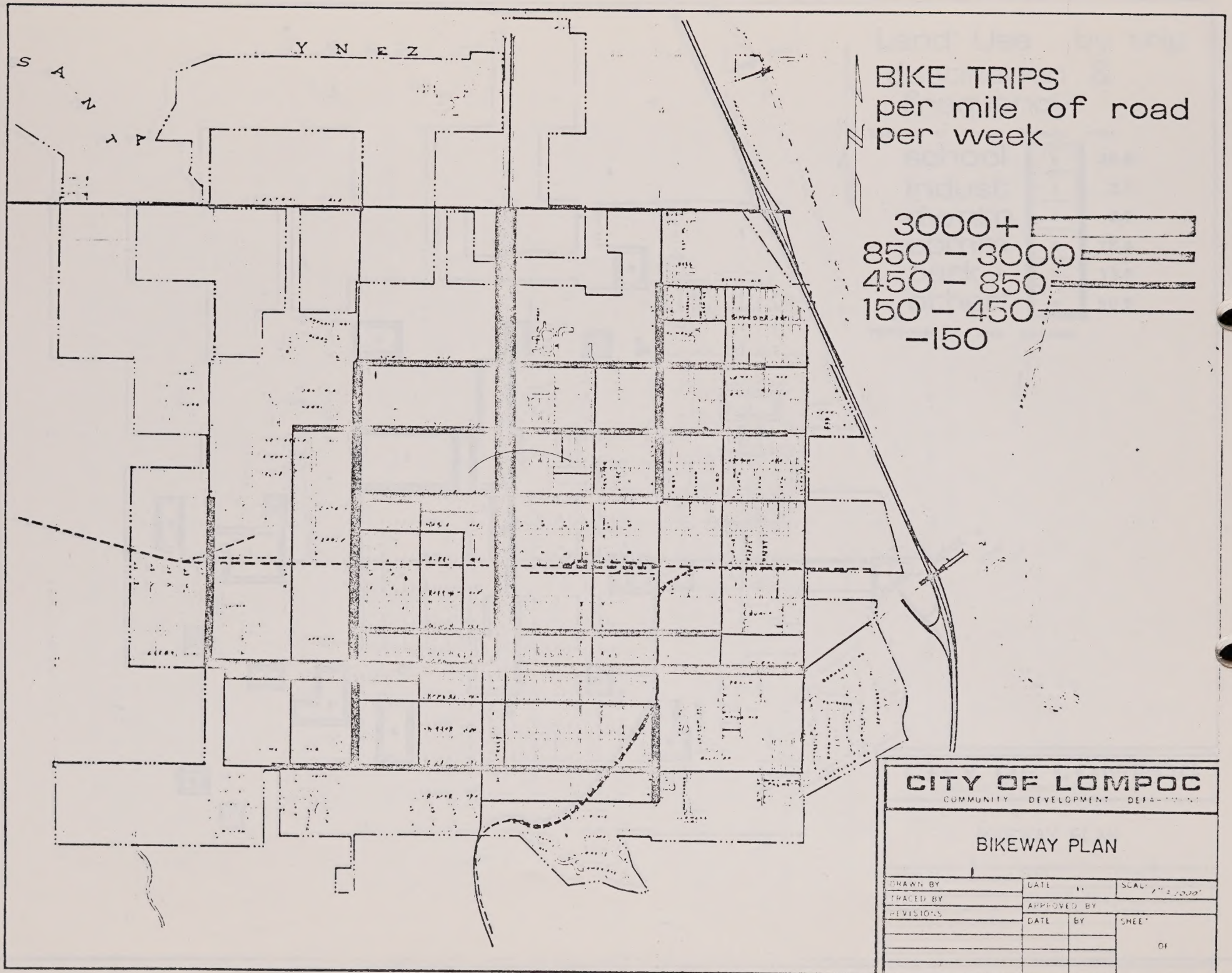
Lompoc is generally conducive to on-street bikeway systems with grid patterned streets and centralized commercial establishments. Most other community activity centers are located either on Ocean Avenue or "H" Street with the exception of the high school, library and local grammar schools. Collectors such as North, College, "O" Street and "A" Street bind together the remainder of the residential and industrial uses.

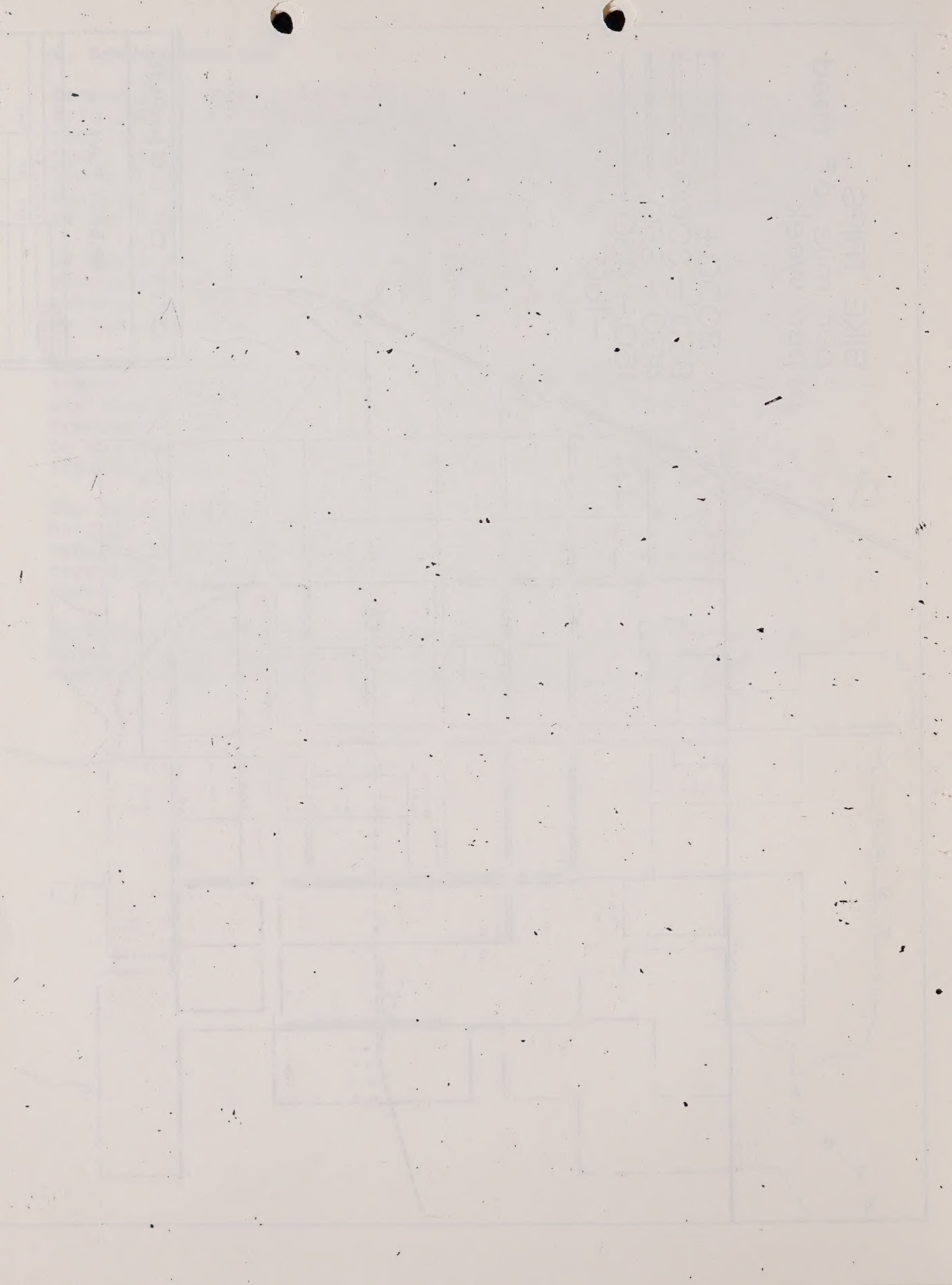
If comparing the major traffic attractors and the residential generators with the land use scheme and the associated street pattern, it generally coincides with the trip demands outlined by the survey of the Touring Club.

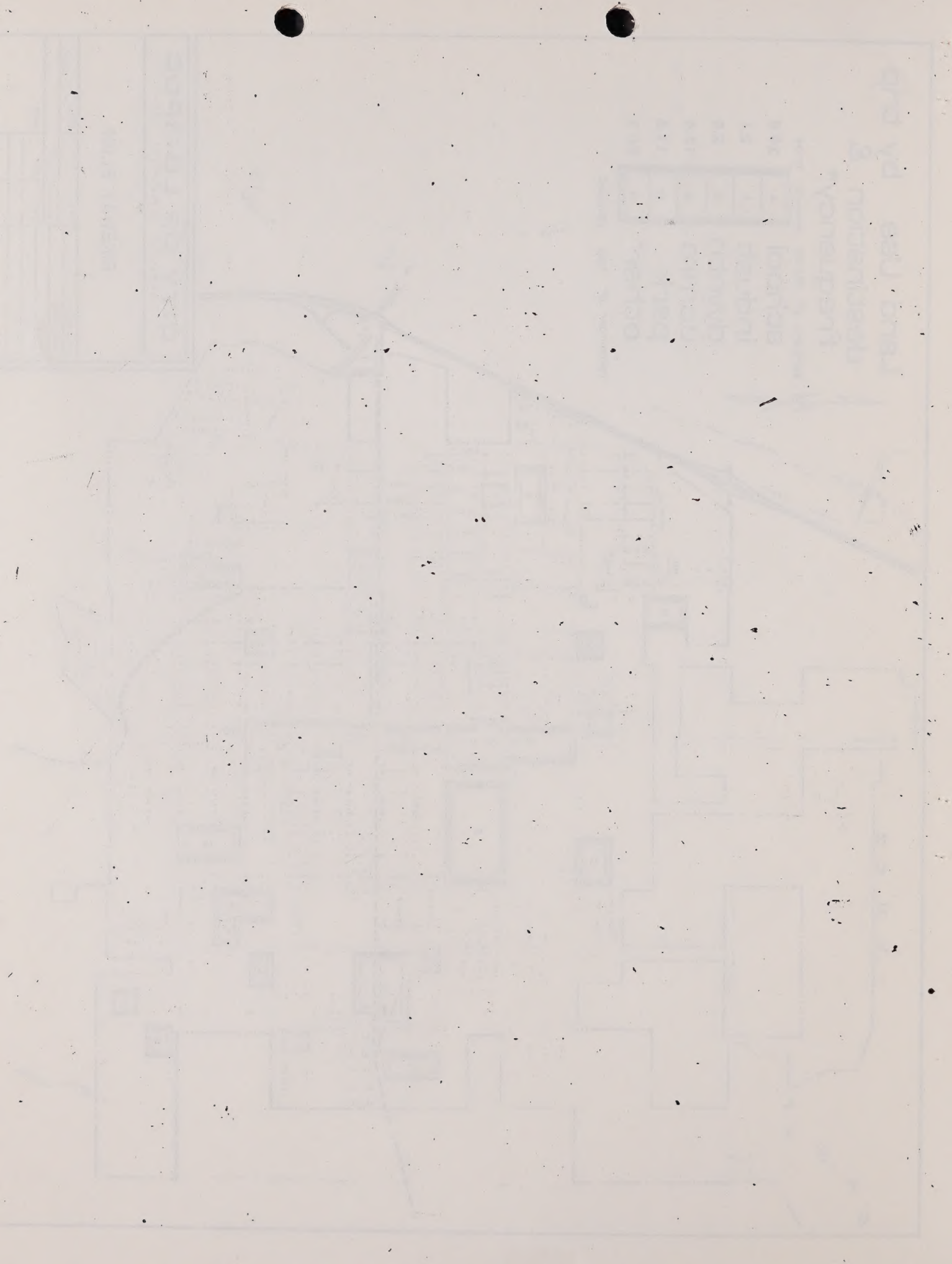
The Lompoc Shopping Center is the major commercial traffic attractor for both cyclists and automobiles. Recreational areas are similar in analysis. The industrial centers are so sparsely frequented by cyclists at this point in time that little can be discovered about user potential. Schools are not major auto traffic attractors while they are the singlemost bicycle attractor.

The major bicycle routes are shown on the map with accompanying bicycle volume averages. It is certain that corresponding motor vehicle volumes show similar relationships for commercial and recreational uses while showing reverse relationships for school uses.

IT SHOULD BE NOTED THAT STREETS DIRECTLY ADJACENT AND PARALLELING MAJOR STREETS ARE MORE OFTEN USED BECAUSE THEY OFFER GREATER GENERAL SAFETY AND MORE SUITABLE CONDITIONS FOR CYCLISTS.







PART VI - SOME FUTURE THINKING.

A. The assumptions of the bikeway plan.

Primary to any planning effort such as we are involved in, is the set of assumptions we make about our community and the major topics we hope to address. In order to begin to chart a course of action, the assumptions must be based on data derived from a close look at the community function, and in this case, the role of the bicycle in that function.

The following assumptions are based on present trends in the nation, the State, the region, and most importantly, the community. They reflect the present situation of bicycle use and potentials for the future.

1. The bicycle will gain increasing popularity as a transportation mode in the Lompoc area.
2. The rate of adult use of the bicycle for recreational and utility purposes will climb as provisions for such use by local government and commercial interests are established.
3. The development of bikeways in Lompoc will promote proper use of bicycles under present California Vehicle Code and local ordinance regulations.
4. The development of a Bikeway Plan will provide a valuable margin of safety for the bicyclist when bike routes are established under well designed traffic controls.
5. Bicycle theft in Lompoc is a severe problem and a deterrent to greater utilization of the bicycle's assets.
6. There is a lack of proper terminal facilities (storage, locking, etc.) for the bicycle within community activity centers where theft is more likely to occur.
7. Commercial and general economic facilities could be better served through greater access by bicycle.
8. Aesthetic, cultural, and historical features of Lompoc could be better served through greater access by bicycle.

B. Goals.

One of the most difficult problems to overcome in any planning effort is to set up a priority of goals which both speak to the urgency of the topic at hand and set far reaching enough goals to improve the topical conditions or bring about desired results over a long term period. The goals statement reflects this dual purpose in that the short range goals speak to the urgency of providing some manageable bikeways system through and to all

areas of the city and connect to the proposed county plan. The long range plan goals statement is far reaching enough that it will touch on a wide variety of areas in community development for years to come.

Goals of the Short Term Planning Effort.

1. To provide a system of bikeways which connect the county system in a logical, efficient and complementary manner.
2. To provide a system of bikeways which will allow for the safest possible operation of bicycles within the city.
3. To provide at least minimal access to those community activity centers serving the largest volumes of bicycle traffic.
4. To provide rudimentary forms of bikeway terminal facilities (storage, locking, etc.) in community activity centers.
5. To minimize costs of implementation of the short range plan while maximizing safety and essential benefits.

Goals of the Long Range Planning Effort.

1. To provide an extension of the mobility of the Lompoc resident with optimum transportation efficiency and alternatives.
2. To provide the cyclist with a pleasurable, imageable and functional mode of transportation, throughout the city.
3. To extend the potential for commercial, industrial and recreational activity through increased access by cyclists.
4. To assist in maintaining the present level of environmental integrity by promoting the use of bicycles as a viable alternate mode of transportation within the Lompoc Valley.
5. To assist in developing citizen awareness as to the role of cycling in physical health, environmental health and community activity.
6. To promote the establishment of terminal facilities on a level of sophistication complementary to a total transportation system.

C. Objectives.

In order to provide a bridge between the broad goals which have been developed and the specific components of the bikeway plan, a set of definitive objectives based on the data derived from our surveys and the goals enumerated above are presented here.

The following objectives will affect the general level of bikeway design standards, the specific routing requirements, and many other aspects of community development.

I. Increased accessability for all purposes to all areas of the city.

A. Provide a route or set of routes giving access to or near areas of commercial, industrial, recreational, educational and civic activity.

1. Provide a route which gives access to the downtown area.
2. Provide a route which gives access to the shopping centers on North "H" Street.
3. Provide routes connecting residential areas to major parks and recreation sites includeing Ryon Park, the municipal pool, Beattie Park, Ocean Park, River Park, Miguelito Park, the La Purisima Mission, and smaller parks and other recreation sites.
4. Provide routes to centers of high employment within the city.
5. Provide routing along major traffic corridors linking schools and residential areas.
6. Provide routes from residential collectors to civic areas including City Hall, Court Building, County Buildings, Police and Fire Departments.

B. To provide a set of routes, where feasible, which offer greater incentives for bicycle use (parking, storage, right-of-way, minimal stopping and starting, and minimized hazards) over auto use with maximum bicycle safety.

1. Choose routes which limit the necessity of stopping and starting as well as traffic congestion from all sources.
2. Choose routing which limits heavy traffic intersections and uncontrolled intersections.
3. Choose routings which offer the most direct routes from traffic generators to attractors (i.e., activity centers).
4. Where practical, the fastest and most direct routing separate from auto right-of-ways should be developed.
5. Provide bicycle parking and storage in parking lots in locations closest to stores, businesses and civic facilities.

6. Provide bike locking and/or storage facilities which either enclose completely the bicycle or which allow for securing all wheels and the frame to prevent theft and vandalism.

II. Provide bikeways which decrease the hazard in auto, bike and pedestrian movement.

- A. Limiting bicycle interaction with automobiles through the use of exclusive right-of-way with definitive markings on streets and through intersections.
- B. Design intersections which separate bicycle and pedestrian traffic.
- C. Develop turn lanes and signing which resolves the conflict of auto and bicycle turning.
- D. Develop adequate width to bikeways which must coexist with parked cars and related hazards such as opening car doors and autos maneuvering to park.
- E. Enforcement of provisions in law and ordinance which would restrain violations of the separate rights-of-way.

III. Minimizing cost in providing the optimum facility and maintenance.

- A. Long range plan routing and parking to be developed providing the optimum benefits at the least cost to local taxpayers by:
 1. Developing a system of fines and penalties (for major violations of traffic laws dealing with bicycles and bicycle rights-of-way) payable to a bikeway development fund.
 2. Develop a bikeway development fund from donations.
 3. Develop within the zoning and subdivision ordinance requirements which provide for bikeways and parking and terminal facilities through new residential and large commercial areas.
 4. Develop State and Federal funding sources for comprehensive transportation planning through the greater use of non-automobile oriented transportation funding programs which are available.
 5. Utilize the presently available SB 325 funds in conjunction with the physical development of the backbone routing plan, and in conjunction with the planning phase of the long range plan.

6. Stage the long range program to amortize out over a reasonable period of time.

IV. Optimize city features.

- A. Provide bikeways to areas of historical significance such as the ruins of the original mission, the Veterans Memorial Building, the City Museum and other sites of historic significance.
- B. Provide bikeways to all local parks from residential areas.
- C. Provide bikeway through the downtown area and incorporate bikeway design into the downtown revitalization effort.
- D. Develop a number of areas throughout the Lompoc Valley which would serve as bicyclist rest stops which would include facilities like:
 1. Locking bike racks.
 2. Rest rooms.
 3. Drinking fountains.
 4. Telephones.
 5. Benches.
 6. Information services.
 7. Camping and campground facilities.
- E. Develop a bikeway through the proposed river park area and connecting the La Purisima Mission with the river park.
- F. Develop a bikeway along the east/west channel easement area across the north side of town and around the flower fields.

PART VII - DESIGN CRITERIA.

The criteria that the plan and standards have been developed upon originated through years of bikeway planning both in Europe and the United States. Much of the following is uniform to most bikeway planning efforts and is fundamental in bikeway development for the Lompoc Area.

- A. The plan must contain components relevant to an area wide system showing continuity of design for the regional planning effort, the local recreational bikeway function and the utility function. It would make little sense to plan bikeways for Lompoc without including a continuous system of connections to the County plan as shown in Part VI. It would also be senseless to provide for the county connection while ignoring the needs for local utility and recreation uses, so in the sense that the system must service these uses jointly and independently, the proposed plan must achieve design continuity. The specific design standards must also be generally compatible with the county standards in terms of safety, convenience and transition from the county to city bikeways while the city maintains the flexibility of design necessary to complement the urban pattern.
- B. The plan must provide for safe and convenient city wide access on a scale equal or better than afforded the automobile. In order to gain optimum benefits of a truly comprehensive system, the plan must be so designed as to give access to all areas that autos cannot normally gain access to and, since the bicycle takes up only 1/19th of the space of the auto, should be able to gain access to areas previously open only to pedestrians.

Bikes can be used along railroad rights-of-way, channel easements, between buildings and many places not accessible by auto traffic. If the design standards and routing can capitalize on these features for use by bikes, then the benefits of a bikeway can be greater than achieved by traditional on-street alignments.

- C. The plan must provide for access to all community activity centers which are the primary destination points of the utility cyclist. It must also provide for access to all recreational activity centers for the recreational cyclist.

The opportunity to combine these functions in this plan are great given the disposition of both the utility activity centers and the recreational activity centers in relation to residential traffic generation and the grid system of north-south and east-west streets.

At the same time, utilization of natural areas, green belts and parkways are limited in that they are generally away from utility activity centers and traffic flows. Some utilization can be achieved by the recreation oriented routes and by new routes established in new development areas.

D. The plan must emphasize the fact that a bikeway is an arrangement of shaped space between auto, bicycle and pedestrian uses and must minimize the potential conflicts between autos, bikes and pedestrians. The use of the standard street right-of-way for bikeways will require space for the semi-exclusive use of the bicycle. The automobile driver has quite often available area far in excess of standard lane width. With implementation of the bikeway plan the auto driver will have a reduced operating area which tend to reduce operating speed and induce a higher level of automobile operation safety. Resolution of turning and pedestrian and bikeway crossings will necessitate innovative intersection design with signing and street markings which will be new to the transportation scene.

PART VIII - BIKEWAY DESIGN STANDARDS

There are a few characteristics of the bikeway which must be specifically detailed in order to approach a rational, safe transportation function. These characteristics include the design speed of the facility, the space required by the bicycle and cyclist, minimum width and clearances, grade, radius of curvature, bikeway surface, and drainage; other considerations such as existing street conditions, terminal facilities, travel amenities, vehicle services, existing bikeway facilities and plans and costs.

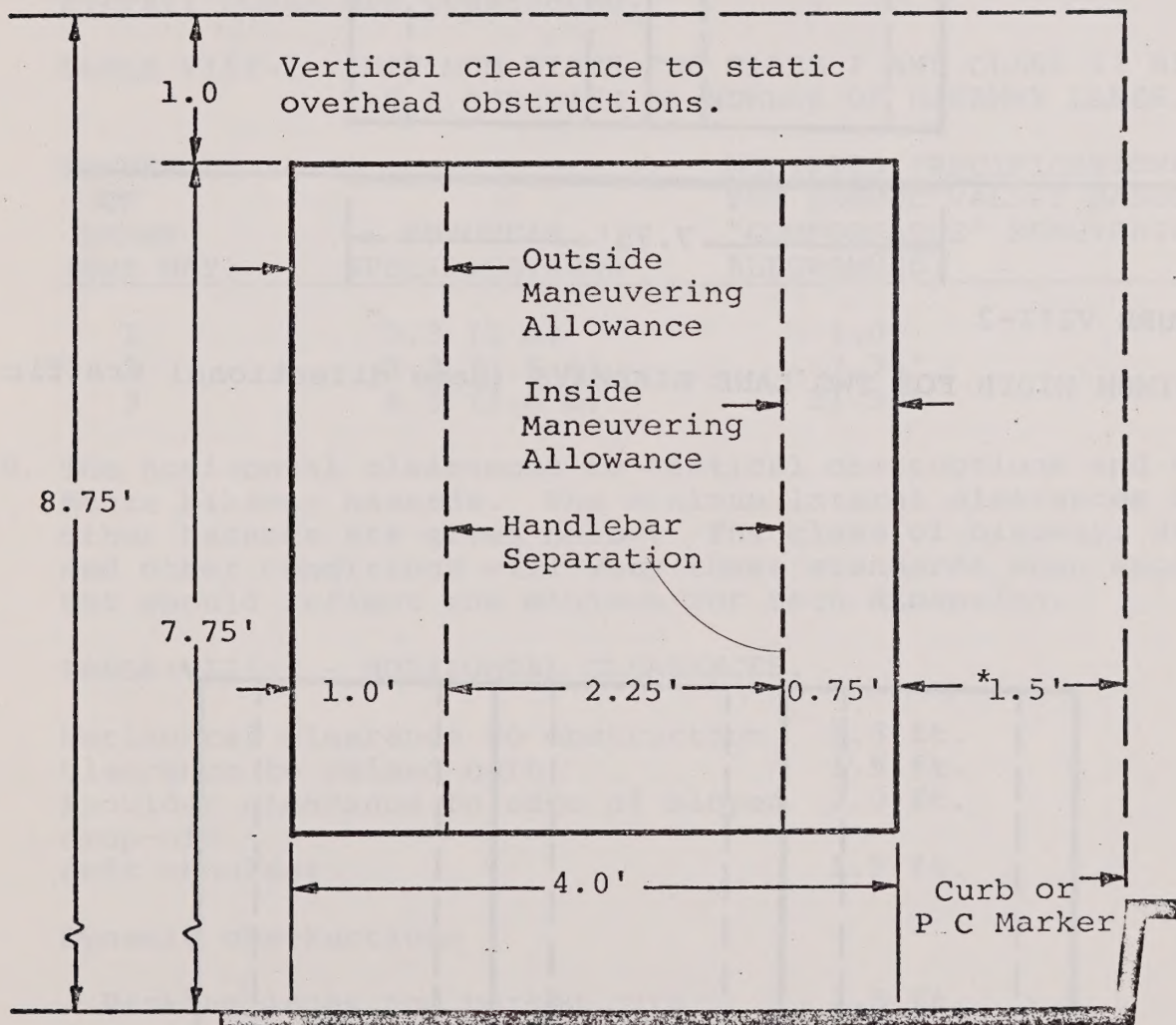
- A. Design speed. The speed a cyclist travels is dependent upon the type of bicycle used, gearing, road gradient, surface, wind magnitude and direction, air resistance, and the physical condition of the cyclist. The recorded speed ranges of cyclists is from 2 to 30 mph with an average speed of 10 mph for most users. For purposes of this plan, a design speed of 15 mph should be used for all Class I bike routes while Class II and Class III should receive some design speed considerations nearer 10 mph. Design speeds should be modified as a result of gradients in excess of 3% and should be increased substantially for downhill users of grades in excess of 5% over a long routing of 1/2 or more miles. In such a case, a design speed of 25 to 30 mph would not be excessive.
- B. Bicycle and cyclist dimensions. In order to afford a bikeway safe from objects protruding into the right-of-way, the basic dimensional requirements of the cyclist must be set out.

The basic dimensional characteristics of a bicycle and cyclist are:

	<u>European</u>	<u>Suggested</u>
Handle bar width	1.96 ft.	2.25 ft.
Cycle length	5.75 ft.	5.75 ft.
Pedal clearance	0.5 ft.	0.5 ft.
Vertical space occupied by cycle/cyclist	7.4 ft.	7.75 ft.
Horizontal space occupied by cyclist		2.25 ft.

The suggested dimensional characteristics are used to provide a more adequate description of the various cycle/cyclist combinations that arise in the United States as the European standards often are smaller than what American conditions may exist.

- C. Bikeway width and clearances. The width required by a moving bicycle is a primary consideration of bikeway design in that the cost of providing the bikeway varies with its width. The specifications below outline the minimum space required by the cyclist, allowance for lateral movement between cyclists, lateral clearance to obstructions and clearance to other hazards. The standards also suggest a "comfortable" allowance range to be employed wherever possible.



*Lateral clearance to static obstructions.

FIGURE VIII-1

SINGLE LANE BIKEWAY MINIMUM WIDTHS AND CLEARANCES.

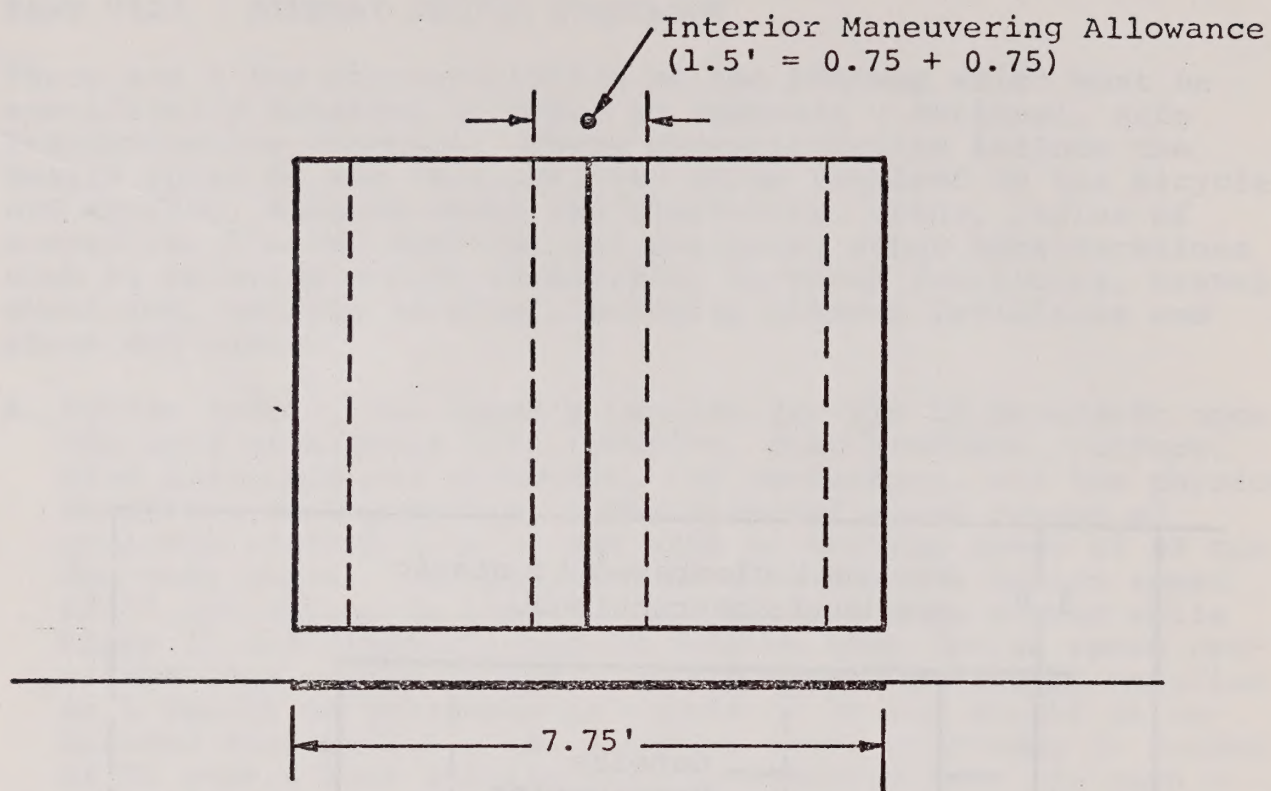


FIGURE VIII-2

MINIMUM WIDTH FOR TWO LANE BIKEWAYS (Same directional traffic flow).

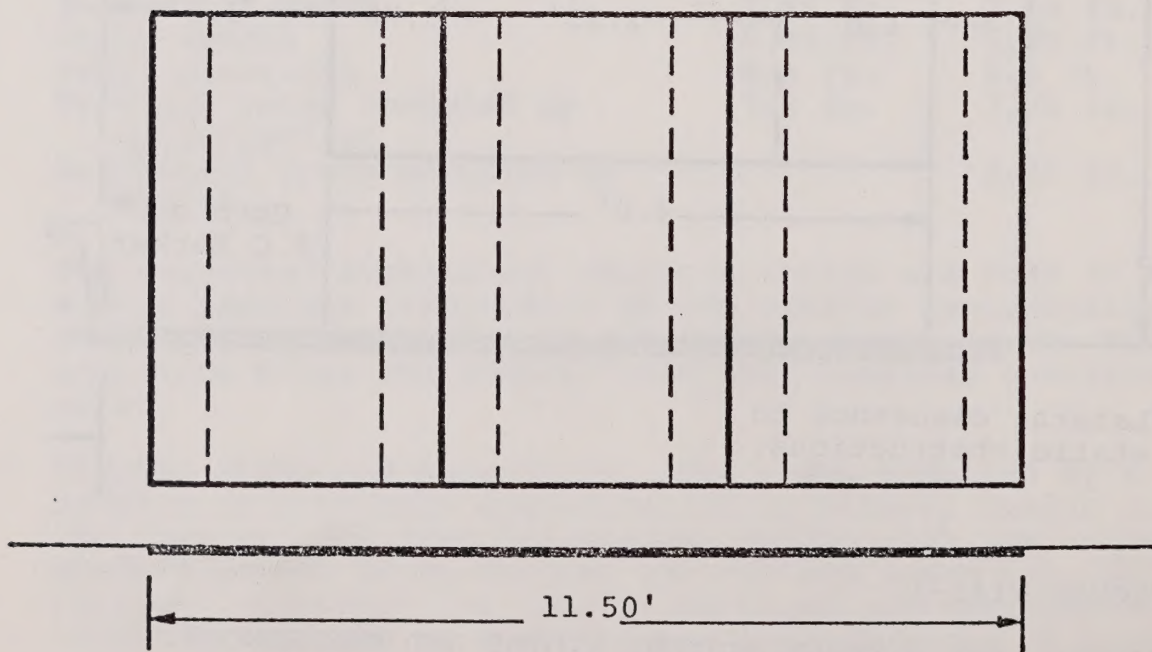


FIGURE VIII-3

MINIMUM WIDTH FOR THREE LANE BIKEWAYS (Same directional traffic flow).

For Class I bikeways with two lanes in opposing directions of traffic flow, the minimum width should be 10 ft. with a centerline dividing the lanes.

Generally, the choice of widths will depend upon the level of service the bike route is designed for, and the existing conditions of the streets and right-of-ways to be used (including any proposed or necessary improvements). If the bikeway is designed to provide a high level of service to community activity centers of heavy bicycle traffic, then liberal standards should be used as minimum. If the routing must be squeezed through some areas where expected volumes of bicycle traffic is light, the conservative standards of above will suffice. Factors such as width of construction equipment and maintenance vehicles may also determine liberal widths when overall costs are considered.

TABLE VIII-1 - MINIMUM WIDTH FOR CLASS I AND CLASS II BIKEWAYS AS A FUNCTION OF NUMBER OF BIKEWAY LANES.

NUMBER OF LANES (ONE WAY)	EUROPEAN SPECIFICATIONS	MODIFIED SPECIFICATIONS FOR THE LOMPOC VALLEY BASED ON "COMFORTABLE" MANUVERING ALLOWANCES.
1	3.3 (1 m)	4.0'
2	5.3 (1.6 m)	7.75'
3	8.5 (2.6 m)	11.50'

- D. The horizontal clearances to vertical obstructions and other State bikeway hazards. The minimum lateral clearances to other hazards are given below. The class of bikeway, street and other conditions will vary these standards when applied, but should reflect the minimum for each dimension.

TABLE VIII-2 - HORIZONTAL CLEARANCES.

Horizontal clearance to obstruction	1.5 ft.
Clearance to raised curb	1.5 ft.
Shoulder clearance to edge of sloped drop-off	2.0 ft.
Soft shoulder	1.5 ft.

Dynamic obstructions

Parking lanes and parked cars	1.5 ft.
Moving vehicle lane	1.5 ft.

When volumes and speeds of auto traffic warrant, the clearance to the moving vehicle lane should be increased to 2.0 ft.

- E. Grade. There are three major factors in the determination of maximum acceptable grade for bikeways and their lengths at that grade.

1. Cyclist characteristics including age, weight, condition, oxygen uptake, etc.
2. Bicycle characteristics including gear ratios, type of cycle, tires, weight, etc.
3. Environmental characteristics including wind direction and magnitude, road surface, etc.

There is a lack of reliable technical data as to how acceptable grades are mathematically determined, but for this study, references are made to both European and American standards presently being utilized. Table VIII-3 represents this data.

TABLE VIII-3 - GRADE AND MAXIMUM GRADE LENGTH

<u>BIKEWAY GRADIENT</u>	<u>DESIRABLE LENGTH</u>	<u>EUROPEAN LENGTH</u>	<u>AMERICAN LENGTH</u>
10%	30 ft.	49.5 ft	---
5%	80 ft.	156 ft.	150 ft.
4.5%	130 ft.	276 ft.	175 ft.
4%	200 ft.	358 ft.	350 ft.
3.5%	300 ft.	623 ft.	500 ft.
3%	400 ft.	947 ft.	750 ft.
2.5%	600 ft.	---	1000 ft.
2	1000 ft.	1230 ft.	Unrestricted
2%	Unrestricted	---	Unrestricted

While there is much yet to be developed in terms of technical determinations of acceptable bikeway gradients, the above desirable lengths would suffice for the grades generally found in the Lompoc Valley. There should be, however, rest stops or bikeway turnouts for grades of 4% or more which continue for long stretches in excess of three times the desired length for each road gradient. Where feasible on Class I bikeways, "switchbacks" should be utilized to obtain a lower bikeway gradient for the uphill user.

- F. Radius of curves. The necessity for establishment of standards relating to radius of curvature is limited primarily to Class I bikeways with the exception that on planned future streets where bikeways will be established, some alignments should reflect bikeway radius planning.

In a study of bikeway standards by the School of Engineering and Applied Sciences, UCLA, a study was done to obtain the relationship between the radius of curvature and the design speed of the bikeway:

"Thus to obtain an empirical relationship between radius of curvature and velocity a simple experiment was conducted wherein the minimum comfortable unbraked turning radius was measured as a function of the cyclist's velocity. In the experiment bicyclists were instructed to ride at various velocities while negotiating a 180 degree turn in the smallest "comfortable" arc without applying their brakes. All tests were done on level, dry, paved asphalt.

'As anticipated, the size of the arc increased with velocity. Data for the equivalent radius of curvature of the turn as a function of velocity yielded the following linear relationship:

$$R = 1.25 V + 1.4$$

where,

R= the unbraked radius of curvature (ft.)

V= the velocity in mph.

'From the equation, for a Class I bikeway design speed of 10 mph, the "comfortable" unbraked radius of curvature is 13.9 feet."

This linear relationship should be used to obtain the minimum radius of curvature for all Class I alignments for the Lompoc Valley.

- G. Bikeway surface, base and subgrade. The Class I bikeway must be of such material and construction that it is adequate to support the wheel loads of bicycles and maintenance vehicles that may use the facility. Surface and base materials such as stabilized earth, stone chip, soil cement, asphalt cement, hot mix asphalt concrete, colored hot mix, cold mix asphalt concrete, soil asphalt and concrete are all potential materials applicable to bikeway use. However, as costs of surfacing are a large factor here, surfacing of bikeways should be accomplished by methods and with materials already in use by the city.

As asphaltic material is relatively inexpensive for construction and maintenance costs, it should be used throughout the system. Thickness and other properties and conditions should be dictated by present roadway standards.

When determining width of paving, the following comments from "Effective Design for Bicycle Paths", Paving Forum, April 1966, P.7" National Asphalt Paving Association, should be noted:

"Most asphalt pavement is placed with spreaders and mixing plants are geared to the high rates of production that can be achieved with spreaders. Conventional spreaders can place widths ranging from 8' to 12'. If narrow widths are used that preclude the use of conventional spreaders, the cost of hand laying may boost the price per ton of the mix to the point where the narrow hand spread walk will approach the cost of a wider machine laid walk."

Class II bikeways, located generally on the street right-of-way will not necessitate resurfacing as these surfaces meet maintenance vehicle and bicycle requirements. It is however, necessary to maintain the right-of-way in good repair and insure against "potholes" and large breaks and crevasses. It will also be important to maintain and refurbish areas crossing railroad tracks as ground and surface displacement occurs at a greater rate than on average public streets.

- H. Drainage. Class I bikeways will necessitate drainage to prevent accumulation of surface water; a substantial hazard to the cyclist. A 2% to 3% cross slope along the surface course will suffice. When bikeways are cut into a hillside, drainage should be provided from the high side on a scale adequate to divert all uphill runoff under and/or away from the bikepath.

For Class II and III bikeways, existing drainage systems will usually be sufficient, but problem areas should be provided with adequate drainage facilities.

- I. Bikeway design capacities. The capacity of a bikeway is generally measured in units such as cycles/hour or minute or other similar unit of time. However, a design capacity does not reflect the actual level of service that is desired or feasible under existing or prognosticated conditions. For purposes of this plan, the level of service (i.e., the need for passing, riding in groups or providing for different speeds of travel, etc.) should outweigh the unitary design capacity figures in terms of designing bikeways of single or multiple lanes.

Class I bikeways planned for recreational use should be four lane, two way bikeways as these routes will be generally located in parks, open space areas and the like. Class I bikeways planned for utility purposes should be two lane, two way bikeways as these routes will be located in areas where conservation and maximum utilization of space is necessary.

Class II bikeways serving areas of extremely high use by cyclist should be two lane, one way bikeways.

Most Class II bikeways, however will be sufficient in the areas served as one lane, one way bikeways. These routes will service the large majority of bicycle traffic throughout Lompoc.

It is generally accepted that Class II and III bikeways since usually on public streets, be limited to one way directional flow as two way flow is determined to be a traffic hazard.

Volume criteria, while not ideal in determining bikeway design, must be considered in terms of peak hour and total volumes to depict significant figures. The significant figures generally acceptable in determining the need for multiple laning, separated right-of-way, or alternate routings include:

1. Regular bicycle traffic peak hours.
2. Future bicycle traffic peak hour demand.
3. Motor vehicle traffic at peak hours.
4. Correlation of traffic volumes at both bicycle and automobile peak hours.
5. Items 1 through 4 by trip type and purpose.

If the level of service to be offered the cyclist in terms of the goals of the short range plan is to be implemented, the following recommended volume criteria should be adhered to as closely as possible. This table was formulated from material given in "Bikeway Planning Criteria and Guidelines", Institute of Transportation and Traffic Engineering, April 1972.

TABLE VIII-4 - VOLUME CRITERIA FOR BIKEWAYS.

<u>MOTOR VEHICLE VOLUME</u>	<u>BICYCLE VOLUME</u>	<u>RECOMMENDED NO. BIKEWAY LANES</u>	<u>BIKEWAY CAPACITY (Cycles/Hr.)</u>
-2000/day	-50/day	-----	-----
-2000/day	+50/day	1	1700/hr
2000-5000	-50/day	1	1700/hr
2000-5000	+50/day	1	1700/hr
2000-5000	+200/day	1 to 2	3400/hr
+5000/day	-50/day	1	1700/hr
+5000/day	+50/day	1 or 2	3400/hr
+5000/day	+200 day	1 or 2	3400/hr

- J. Provision of Class II and III bikeways on existing streets. The placement of the bikeway on public streets is of critical importance. The general safety and convenience of traditional configurations does not allow for the interfacing of two way Class II and III bikeways and is not considered herein. Furthermore, two way Class II and III bikeways should not be allowed in the Lompoc Valley as they are definite violations of California Vehicle Code. However, one and multiple lane bikeways of one way design are fully covered in terms of existing and future proposed street configurations.

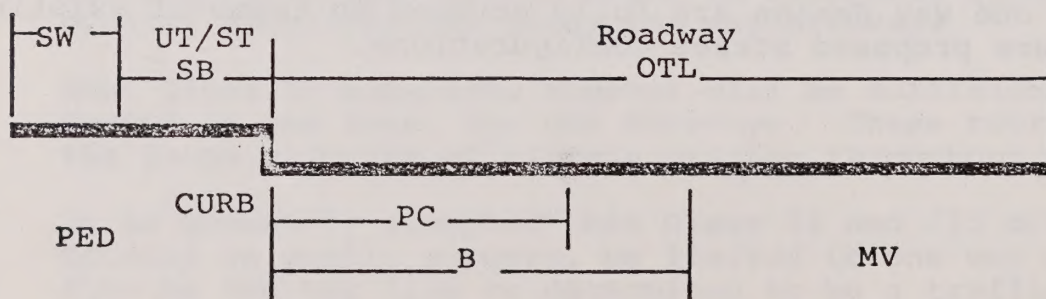
We have adopted the following symbols to assist in enumerating the alternatives developed for the Lompoc Valley.

BW = bikeway
B = bicycle
PC = parked car
OTL = outside traffic lane
MV = moving vehicle
SW = paved sidewalk
SB = setback from curb to sidewalk
UT/ST = utility/street tree placement
PED = pedestrian right-of-way

The elevation views provided herein will show general placement alternatives for bikeways in relation to pedestrian rights-of-way, utility and street tree placement and the roadway. Some of the views will also show general dimensions and will provide recommendations as to minimum or suggested dimensions or conditions.

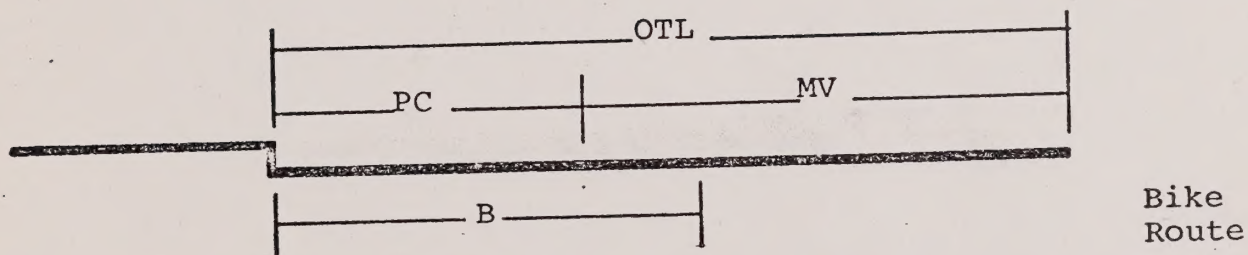
Under present California Vehicle Code "Every person operating a bicycle upon a roadway shall ride as near to the right side of the roadway as practicable,.....", but a bicycle is afforded every other right and responsibility afforded the automobile. With this in mind, the following diagrams will show placement of the bikeway and its relation to proper traffic flows, safety considerations and related conditions.

FIGURE VIII-4
Present
Status
No Bikeways



The use of a bikeway on the roadway provides a greater variety of potential variations of configurations based upon the volume of auto traffic, volume of bicycle traffic, parked cars and parking turnover rate, etc. The alternatives provided here are generally best suited to the travel characteristics found in Lompoc and the surrounding valley. All alternatives presented are one way bikeways only. Similar conditions on other side of street is implied.

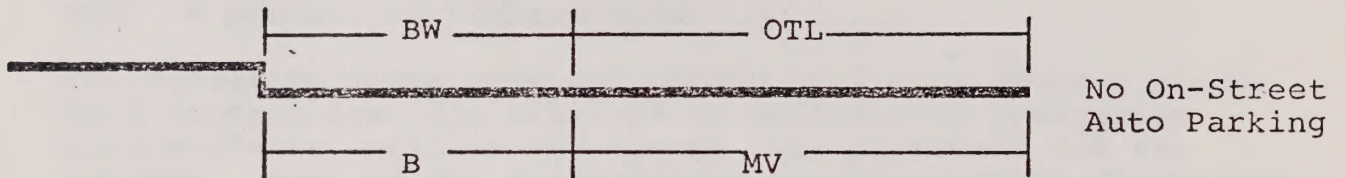
FIGURE VIII-5



This alternative is considered a Class III alignment of a bikeway on the roadway surface and provides only for a sharing of the right-of-way for the cyclist with the parked car and the outside moving vehicle lane.

The alternative provides for signing and stenciled street messages and does not provide any safety considerations. This alternative should only be used as a last resort in areas where street width will not permit a Class II bikeway.

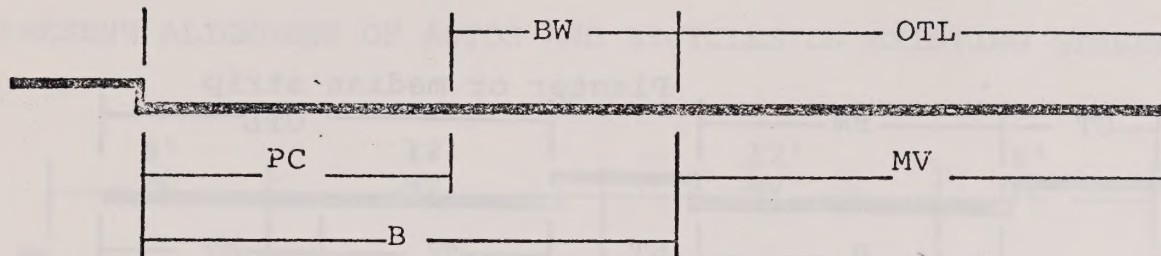
FIGURE VIII-6.



This alternative would provide a separation of the auto and the bicycle for the use of a painted stripe demarking the separate rights-of-way. The additional safety factors here include the elimination of the right-of-way conflicts of Figure VIII-5 as well as elimination of the problems of opening car doors and maneuvers to park and enter the outside traffic lane. The elimination of on street parking would necessitate adequate alternative parking.

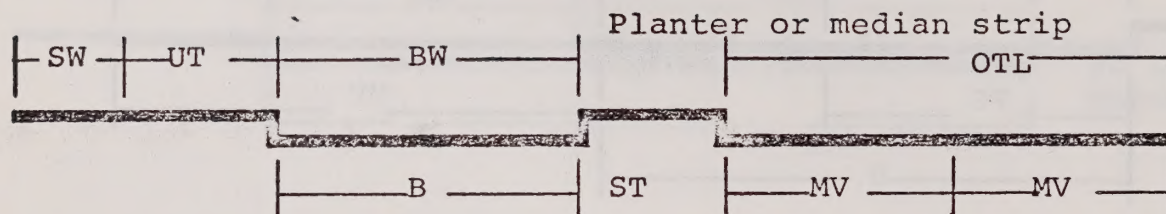
This alternative can be considered where adequate off-street parking is provided for in commercial and residential areas where street widening is infeasible. The use of ordinance restrictions on parking is necessary in this instance.

FIGURE VIII-7



This alternative separates the bicycle from the automobile by defining an encroachable bicycle right-of-way which allows for the parking of cars and use of driveways. The general safety relating to bicycle/auto conflicts is reduced over that provided in Figure VIII-5, but the use of this alternative allows for placement of bikeways in areas of larger motor vehicle concentrations and community activity centers without major disruption of vehicle, pedestrian related movements. However, as volumes of auto traffic and speed of travel in the outside lane reaches larger proportions the level of service and safety afforded makes this alternative much less desirable.

FIGURE VIII-8



Where heaviest traffic flows of high speeds (above 35 mph) exist and large numbers of bicycle trips are made daily, this alternative is most suitable. The selected boulevard should, however exceed the average major street width and be developed in areas of few intersections or driveways.

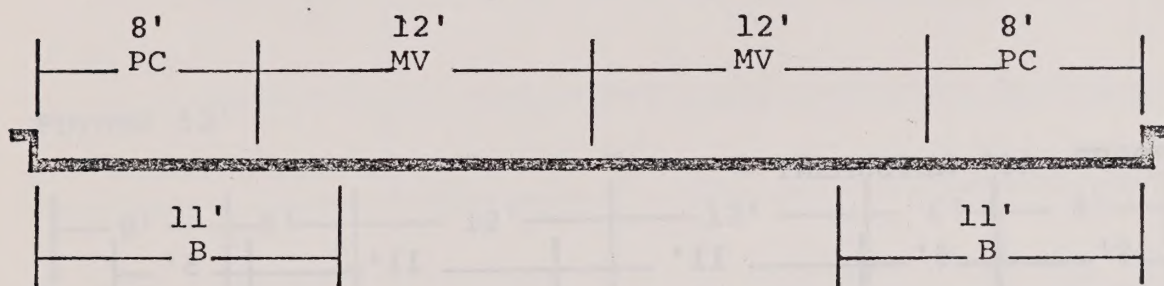
This alternative approaches the optimum in bikeway safety considerations for a Class II system.

K. Existing and future street widths, bikeway placement and street design. The following are graphic descriptions of present streets in the Lompoc Valley and what design and modifications should be used where applying bikeways.

MINOR STREETS

FIGURE VIII-9

PRESENT ALIGNMENT OF AUTOS AND BICYCLES ON EXISTING STREET WIDTH 40'.



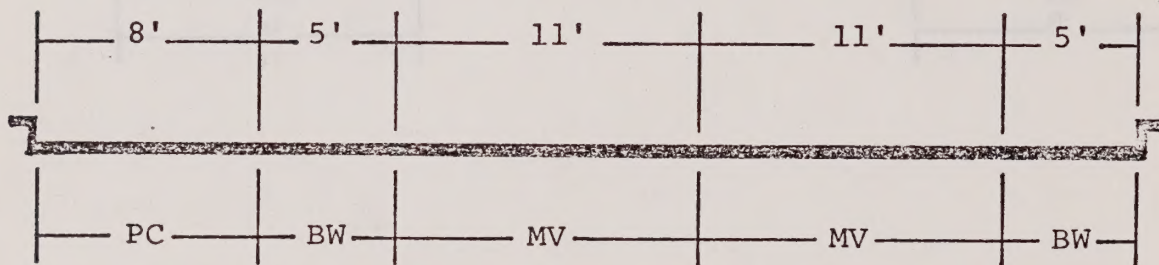
With a 40 ft. street width, two possibilities exist.

1. Since minor streets normally will handle small volumes of traffic at 25 mph a Class III bikeway would possibly serve a low volume of bicycle use. The bikeway would have signing and street stencilling.

2. Since minor street parking is generally low during the majority of the day, Class II provisions could be made by the elimination of parking on one side of the street and narrowing the automobile lanes. This alternative has greater desirability when bike volumes are moderate or greater service (i.e. provisions for peak hour service to schools) over what can be provided by Class III facilities is necessary or desired.

FIGURE VIII-10

PROPOSED 40' ALIGNMENT

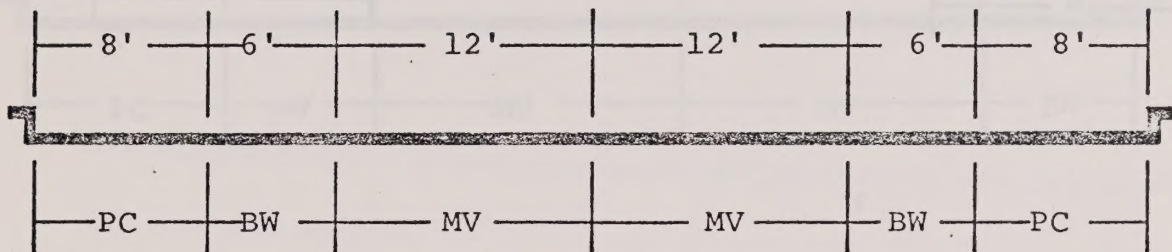


NO PARKING
THIS SIDE

It is however, more desirable to provide adequate widths for all of the uses of the street. When considering future development, attention should be paid to the provision of Class I bikeways in new developments which would connect to existing or planned bikeways. When Class I bikeways are not feasible in new developments or when new or half streets are completed, the minor street should provide for adequate bike-way width as well as parking and vehicle width. The following is an illustration of this point.

FIGURE VIII-11

FUTURE 52'

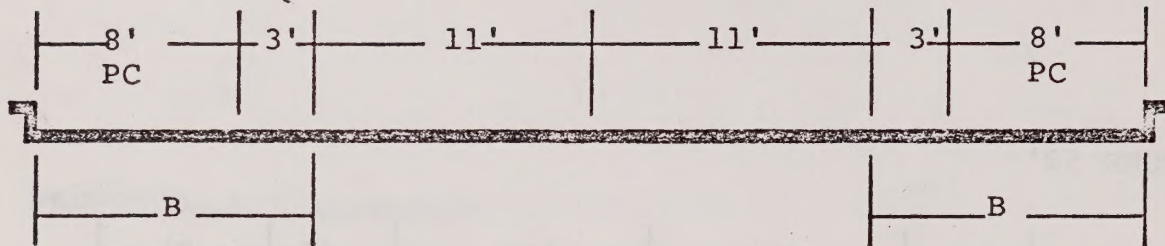


For the above alternative Class II bikeway signing, stencilling and lane markings for bikeways are provided.

MINORS AND COLLECTORS

FIGURE VIII-12

EXISTING 44'

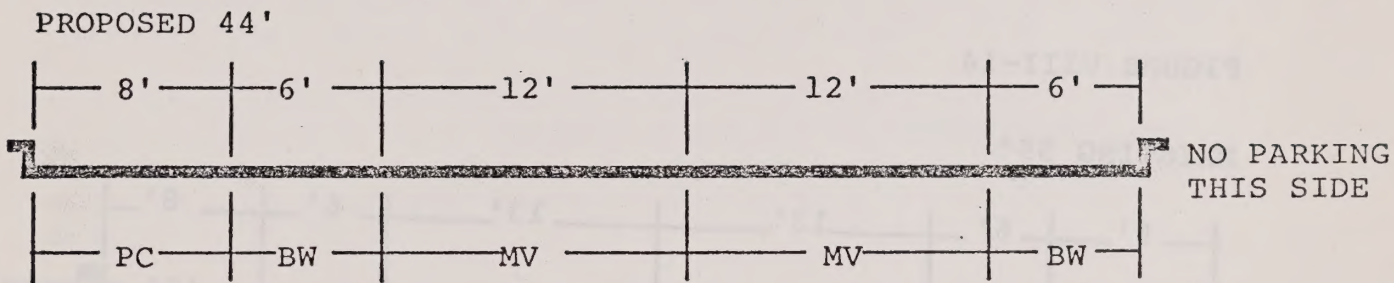


As a minor street, the same alternatives generally exist for the 44 ft. width as for the 40 ft. width except for the ability to provide a wider bikeway and motor vehicle lane.

As a collector, however the volume and speeds of auto traffic will generally be greater and will necessitate additional safety consideration as minimum. Class III facilities are unacceptable on collector streets for this reason.

Depending upon land use, parking turnover rate, traffic volumes etc., the following design is recommended for collector streets of 44 ft. width.

FIGURE VIII-13



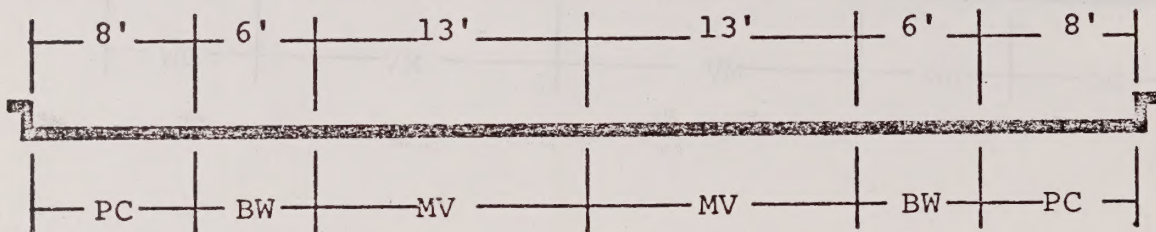
While this alternative in commercial areas would not be suitable if off-street parking was not adequate, for most of the areas served this form is acceptable. However, for future streets and future scheduled street widenings the design of Figure VIII-11 is recommended.

COLLECTORS:

On major collector streets, the width of 55 ft. is fairly standard within Lompoc. Auto traffic volumes are generally high and speeds are normally 35 mph+. In areas of high commercial or school activity bicycle volumes are normally higher than on any other street type. Parking turnover rates are also generally higher than on other type streets. Added safety in width of rights-of-way should be considered as well as more frequent signing and street stencilling. Normal alignment would be as follows:

FIGURE VIII-14

EXISTING 55'

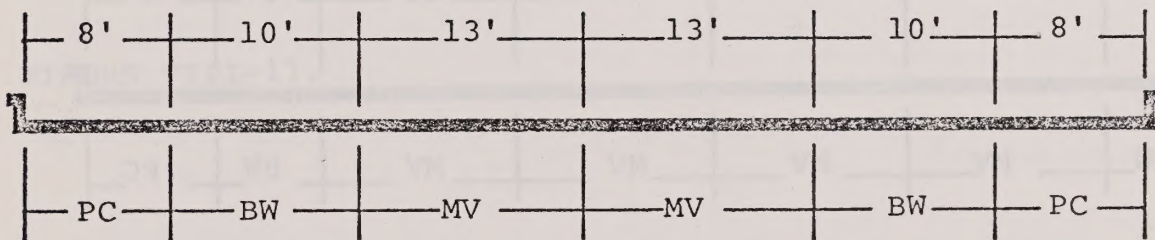


In areas having rapid parking turnover and high volumes and speed of autos, the following is recommended.

While the 55 ft. street width is generally acceptable as a bikeway street width, some volumes of bicycle traffic may not be served well by single lane configurations. It is conceivable that multiple lane bikeways in high peak hour bike volume situations would be needed. The standard 55 ft. width would be inadequate to handle this volume of traffic unless some parking was removed. This alternative in some areas would suffice, but where the potential for street widening is available and parking is a necessity the following configurations are advised on a 62 ft. street.

FIGURE VIII-15.

FUTURE 62'



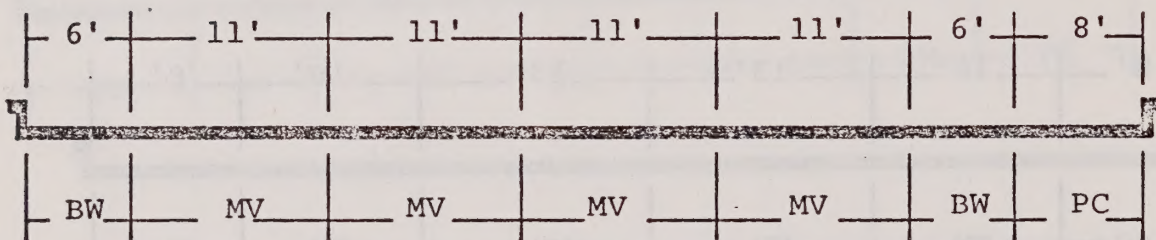
MAJOR ARTERIALS:

The ability or desirability of using a major arterial street is limited in Lompoc. The three major arterials in town carry the bulk of all traffic coming and going out as well as the bulk of in town travel. This, however does not preclude their use where necessary.

Most of the major streets are a minimum of 64 ft. wide and some portions with left turn lanes and "suicide" lanes are larger. Provisions of Class I alternatives around or parallel to these streets should be examined, but the use of Class II bikeways is most likely to occur.

FIGURE VIII-16.

EXISTING ALIGNMENT ON A 64' STREET.



Since the plan presently proposes a bikeway in only a couple of areas on major arterials, we should examine the use of these streets in that light.

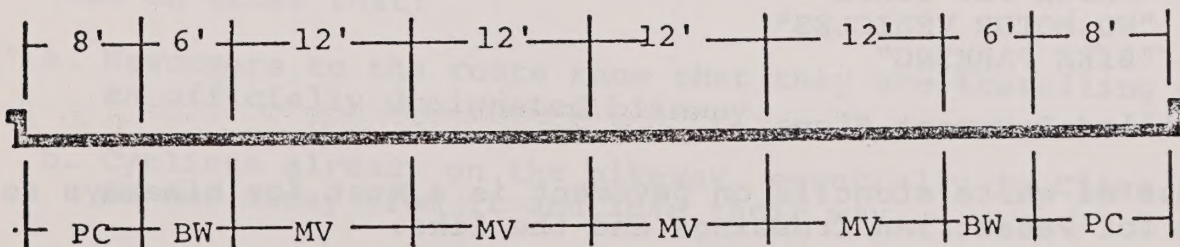
We know that:

1. Traffic volumes are quite high.
2. Speeds range from the speed limit to 50+ mph in some areas.
3. Bike traffic is moderate with peak periods between 7:45 to 8:30 A.M. and 2:30 to 4:00 P.M.
4. The routes selected are primarily for continuity of design between the county and city bikeway plans.

Taking this into consideration, the following street width and lane placement recommendation should be implemented as minimum standards to provide safety and a reasonable transition from the high speed county roads to the Lompoc city streets.

FIGURE VIII-17.

FUTURE 76'



Street width for majors can vary as determined by the use of auto volume, speed, parking and bicycle volume data as well as the determination of the level of service necessary or desired for bikeways. It is however, recommended that for the major arterials a minimum of 76 ft. roadway width be established.

- L. Bikeway Signing. To insure safe and efficient signing of bikeways, the following signing requirements should be implemented.

Standard Signs.

Standard signs authorized by the National Joint Committee on Uniform Traffic Control Devices and which are appropriate for use on bikeway routes include the following, as listed in the 1971 Manual of Uniform Traffic Control Devices (65):

1. BIKE ROUTE (D11-1) - used for marking an officially designated bicycle trail.
2. BIKE XING (W11-1) - used for warning motorists in advance of a point where an officially designated bike route crosses a roadway.
3. NO BICYCLES (R 5-6), PEDESTRIANS PROHIBITED (R 5-3), and MOTOR DRIVEN CYCLES PROHIBITED (R 5-8) are selective exclusion signs that regulate types of traffic which may or may not enter a particular right-of-way.
4. Additional standard signs which are presently in use by this City such as "STOP", "YIELD", etc.

Other signs of special design which will necessarily be developed are:

1. "BEGIN" or "END" "BIKE ROUTE"
2. "WATCH FOR BIKES"
3. "NO MOTOR VEHICLES"
4. "BIKE PARKING"

Stencilled Pavement Signs.

The use of white stencils on pavement is a must for bikeways as it is for Pedestrian Crossings and the like.

Standard Messages:

1. "BIKEWAY" or "BIKE ROUTE"
2. "BIKE ONLY"
3. Turn and directional arrows.
4. Other standard stencillings.

Sign Placement

Since it is intended that all bikeway signing be of a size similar to standard signs for automobiles, placement of these signs and stencillings should be similar in terms of distance to the curb, clearance from trees and other objects, etc.

Sign spacing should be determined as recommended in the Manual for Uniform Traffic Control Devices which states clearly uniform policy for spacing. Generally, sign spacing will be dependent upon the varying conditions present as well as the frequency of existing traffic controls. Excess signing should be eliminated wherever possible but not to the detriment of the cyclist.

Warning Signs.

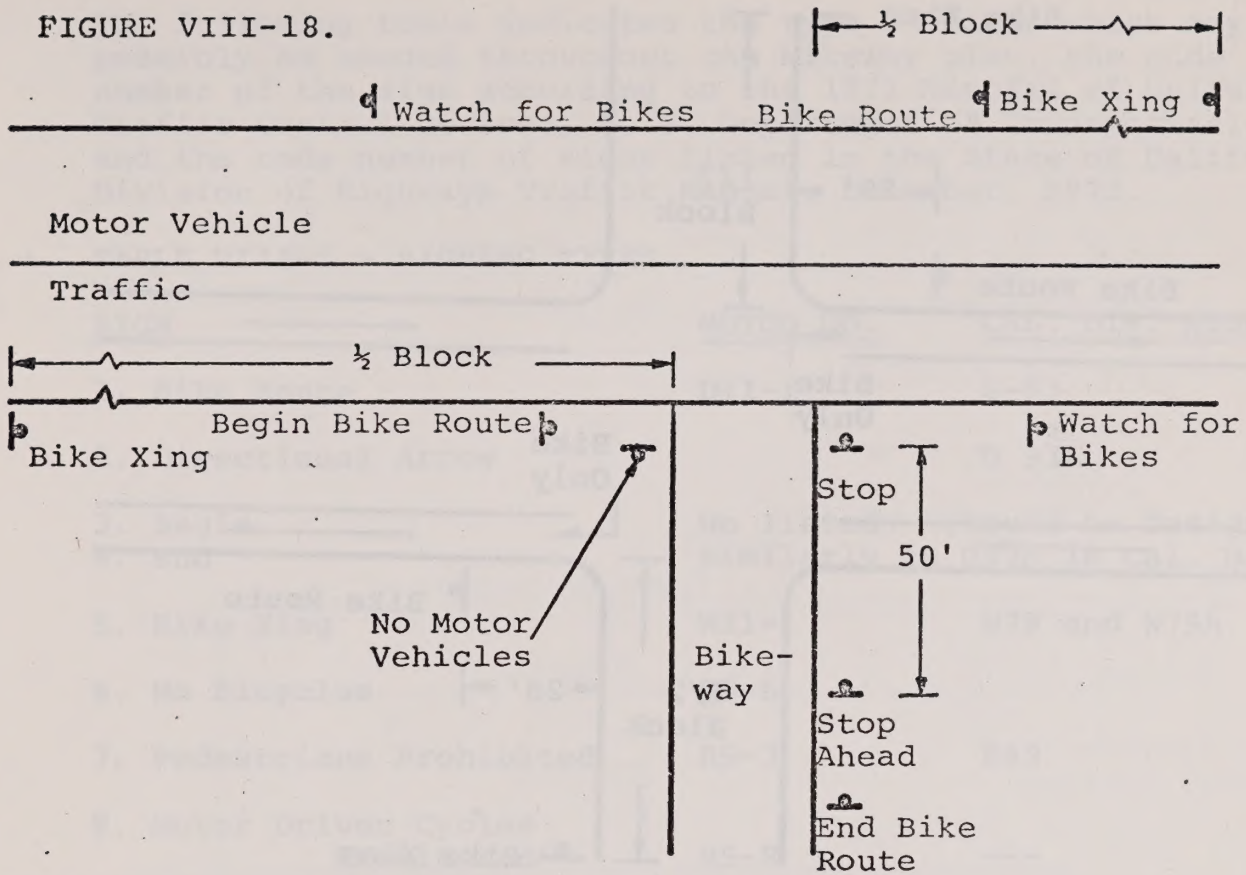
While standard automobile warning signs are sufficient in most instances, some additional warning signs for bicycles must be developed. It is imperative that cyclists be warned that drainage grating hazards, poor road surfaces and the like exist. As a rule, a sign placed 50 feet from the hazard will be adequate.

Generally, a bikeway should receive signing in the following instances:

1. Adequate signing is necessary at all decision points along the bikeway. These include:
 - a. Signs informing the cyclist of upcoming directional changes.
 - b. Confirmatory signs to insure that route direction has been accurately comprehended.
2. Route or guide signing must be provided at regular intervals in order that:
 - a. Newcomers to the route know that they are travelling on an officially designated bikeway.
 - b. Cyclists already on the bikeway, especially in Class III, do not stray from it and lose their way.
3. Warning signs informing motorists that bikes may be encountered should be positioned:
 - a. Whenever a bikeway crosses the roadway at uncontrolled motorist intersections.
 - b. When a bikeway either begins or ends.
 - c. At any other points where large numbers of bikes may be expected. (e.g., parks, schools, recreational facilities).

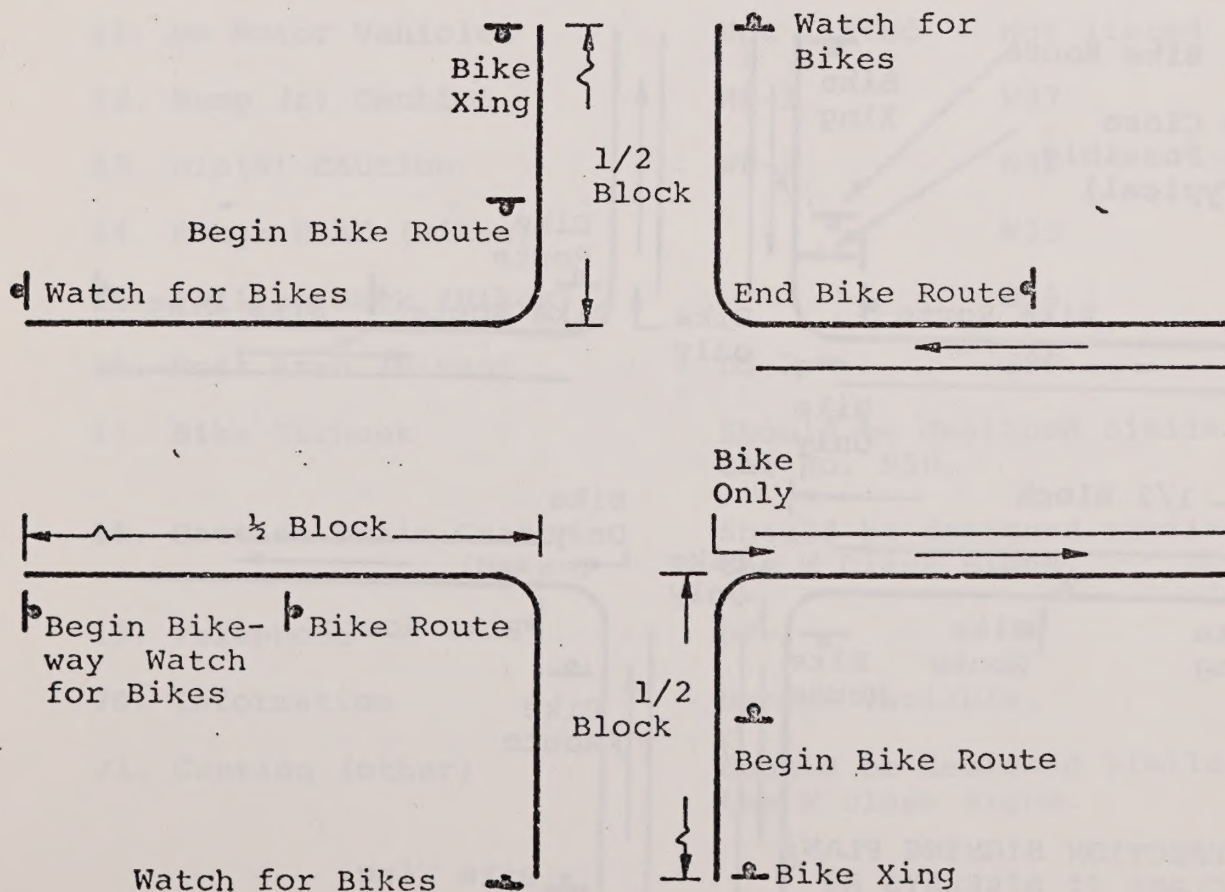
4. In urban areas, motorist directed warning signs should be positioned at a minimum of one half block before bikes may be encountered.
5. Warning signs informing bicyclists of potential hazards require the following specifications:
 - a. Along Class II and III bikeways, signs directed toward the motorist may also aid the cyclist. Little, if any, modification of existing procedures is necessary in such cases.
 - b. Along Class I bikeways and for all hazardous conditions on Class II or III bikeways for which there are no existing signs specific bicycle directed warning signs should be erected. In order to provide sufficient response time these should be positioned 50 feet in advance of the condition toward which they are directed.
6. All signs and stencilling should conform to those specified in the "Manual of Uniform Traffic Control Devices."

FIGURE VIII-18.



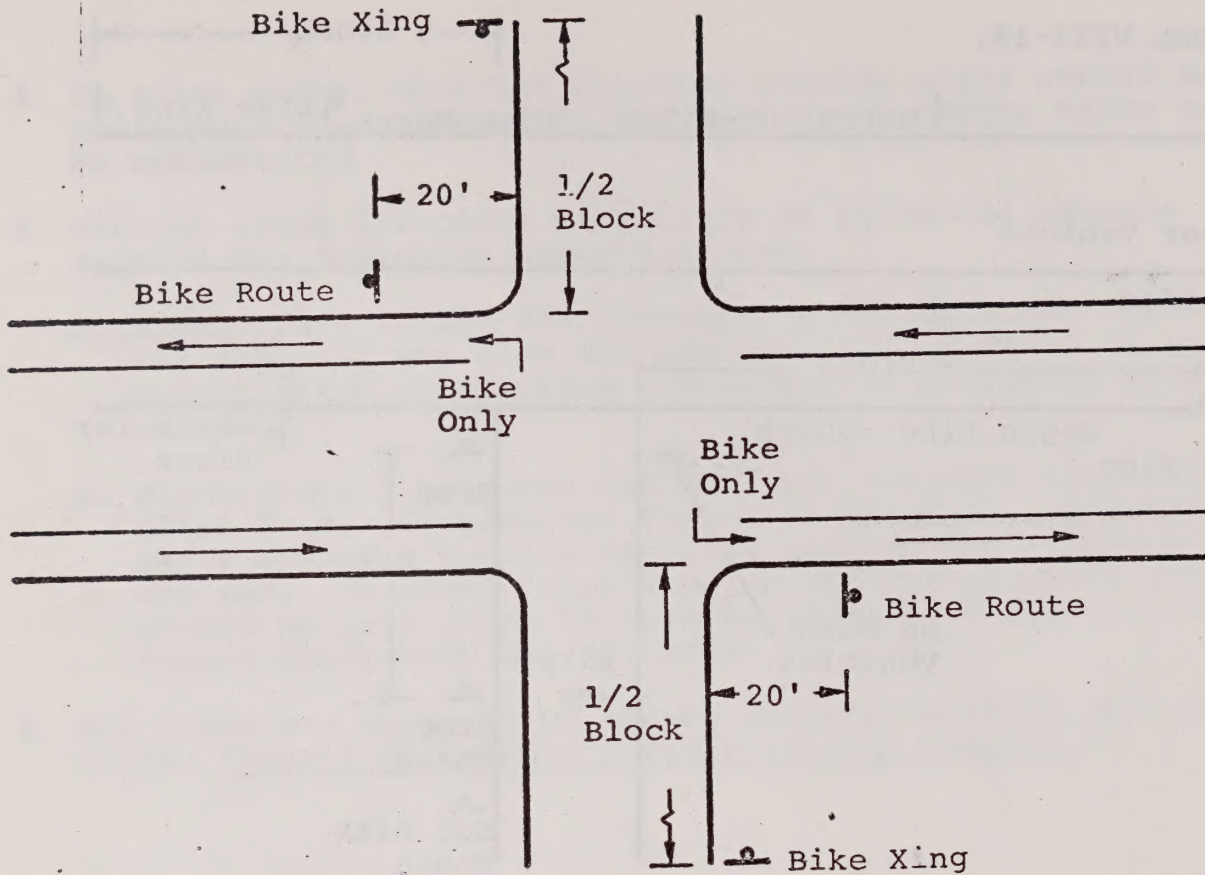
SIGNING PLAN FOR THE BEGINNING AND END OF A CLASS I BIKEWAY.

FIGURE VIII-19



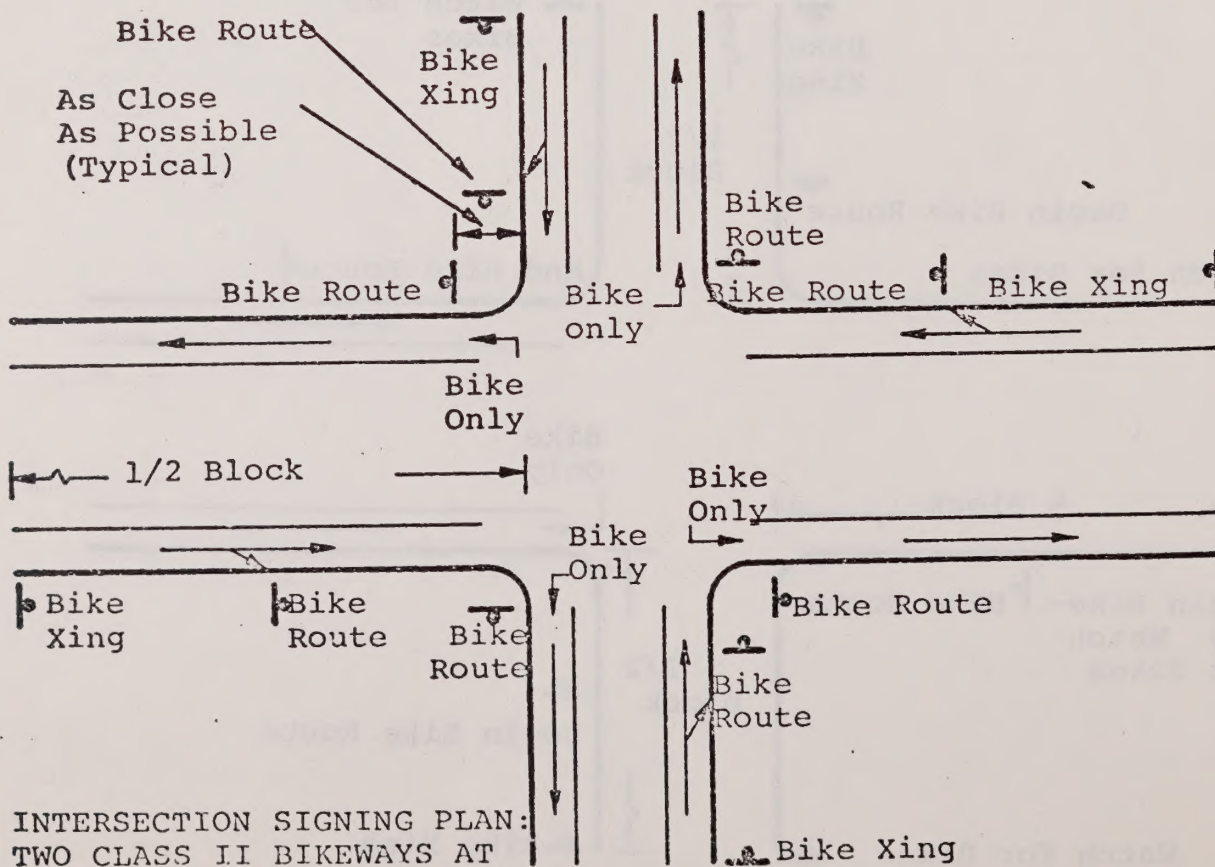
SIGNING PLAN FOR THE BEGINNING AND END OF A CLASS II BIKEWAY

FIGURE VIII-20



INTERSECTION SIGNING PLAN: CLASS II BIKEWAY CROSSING A NON-BIKEWAY STREET

FIGURE VIII-21



INTERSECTION SIGNING PLAN:
TWO CLASS II BIKEWAYS AT
A ROAD INTERSECTION.

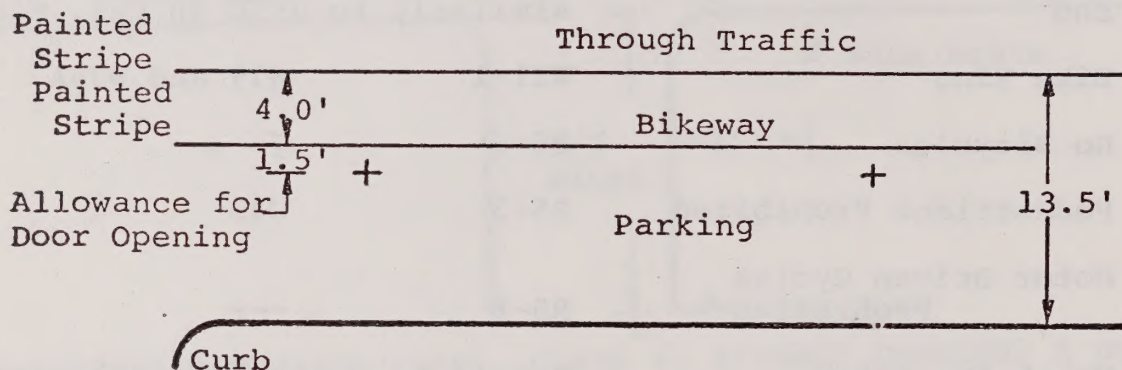
The following table indicates the type of signs which may possibly be needed throughout the bikeway plan, the code number of the sign according to the 1971 Manual of Uniform Traffic Control Devices, U. S. Department of Transportation, and the code number of signs listed in the State of California Division of Highways Traffic Manual, December, 1972.

TABLE VIII-5 - SIGNING TYPES

<u>SIGN</u>	<u>MUTCO NO.</u>	<u>CAL. DIV. HIGHWAYS NO.</u>
1. Bike Route	D11-1	G-93
2. Directional Arrow		G 93A
3. Begin	No listed - should be designed similarly to G93A in Cal. Manual	
4. End		
5. Bike Xing	W11-1	W79 and W79A
6. No Bicycles	R5-6	
7. Pedestrians Prohibited	R5-3	R43
8. Motor Driven Cycles Prohibited	R5-8	---
9. Watch for Bikes	Should be designed similarly to the W class signs.	
10. Bike (Bicycle) Parking	Not listed	Not listed
11. No Motor Vehicles	Not listed	Not listed
12. Bump (s) Caution	W8-1	W37
13. Dip(s) Caution	W8-2	W32
14. Rough Road (Bikes)		W33
15. Falling Rock (Bikes)		W50
16. Rest Area (Bikes)	D5-2	G80
17. Bike Turnout	Should be designed similarly to Cal No. R50.	
18. Caution Drain Grates (Bikes)	Should be designed similarly to the W Class signs.	
19. Telephone	D9-1	
20. Information	Design variable.	
21. Caution (other)	Should be designed similarly to the W class signs.	

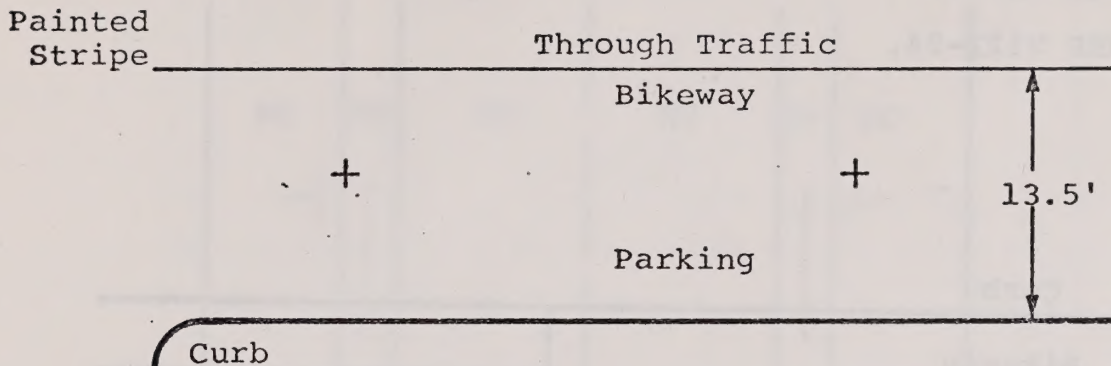
M. Lane markings. Under the design criteria and standards previously enumerated, the use of Class II type bike routes will predominate in Lompoc. Class I routes will be defined in the Beattie Park area as well. It is essential that these rights-of-way be determined under the auspices of traffic control systems for general recognition of intent of these markings by both the motorist and the cyclist. The following alignments and markings or procedures are recommended.

FIGURE VIII-22.



- (a) Parking Stall Provided, Low Parking Turnover Anticipated. (Designed to meet specification in California Planning Manual, Part 8-Traffic Figure 8-602.6) Bikeway Striped on Both Sides. Suggested Standard.

FIGURE VIII-23.



- (b) Parking Stalls May or May Not Be Provided, Low Parking Turnover Anticipated; Bikeway Striped on Traffic Side Minimum Standard.

Stripes demarking bikeways should be solid with a minimum width of 6" and should be of standard reflective traffic white paint.

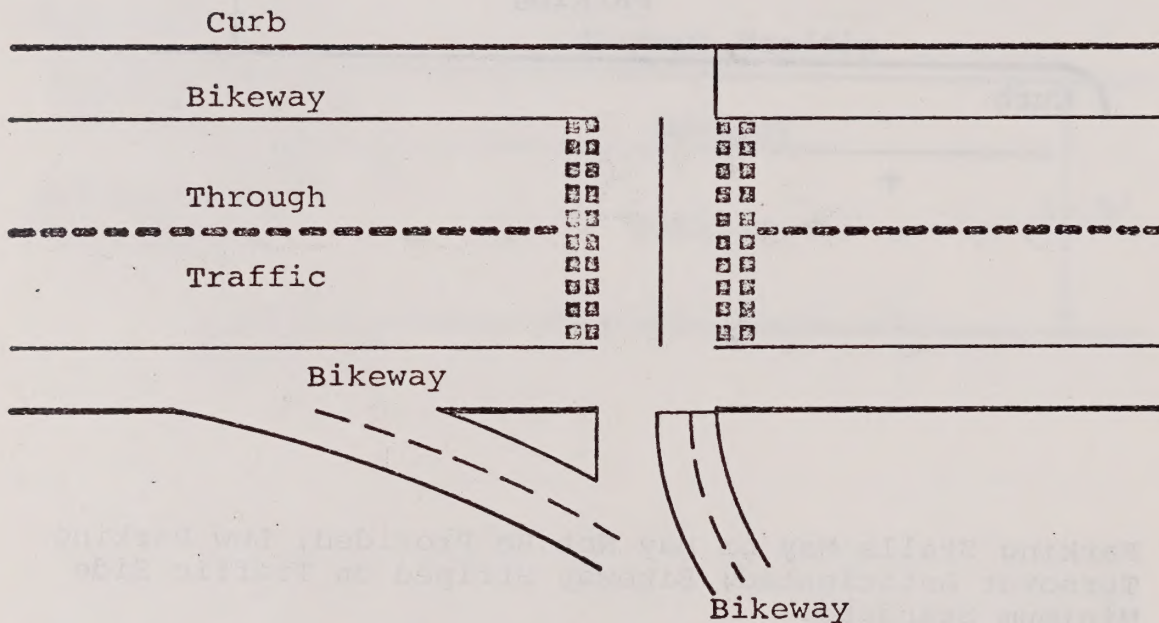
Class I Bikeway Striping and Intersection Markings.

Where Class I facilities are to be installed, centerline striping is necessary as well as lane markings to define the appropriate rights-of-way. The division of the two-way bikeway should resemble that of a four lane roadway with the exception that the painted line widths may be reduced if feasible.

Where a Class I bikeway crosses a street or enters a Class II or III bikeway by crossing a street, the importance of distinguishing between a bikeway crossing and a pedestrian crossing is manifest. Pedestrians generally have different motive characteristics from bicycles and require greater observability in this instance than do pedestrians. A motorist expects a

pedestrian crosswalk or bikeway xing at intersections but generally does not expect a bikeway xing in the middle of a block. Greater protection must then be afforded the cyclist at this point. It is recommended that white traffic paint be applied in 1 ft. x 1 ft. squares in two rows on either side of the bikeway crossing spaced at 1 ft. intervals as shown. It is assumed that all necessary signing is in accompaniment.

FIGURE VIII-24.



N. Intersections on streets. The use of street intersections is an area where the literature is not overwhelmingly instructive and much more work will be needed in this aspect before standards of uniform value are obtained.

The following, however, are recommendations based upon the various design alternatives provided by the UCLA study on bicycles and European bikeway design practices.

FIGURE VIII-25

CLASS II BIKEWAYS AT INTERSECTION OF COLLECTOR AND MINOR STREETS.

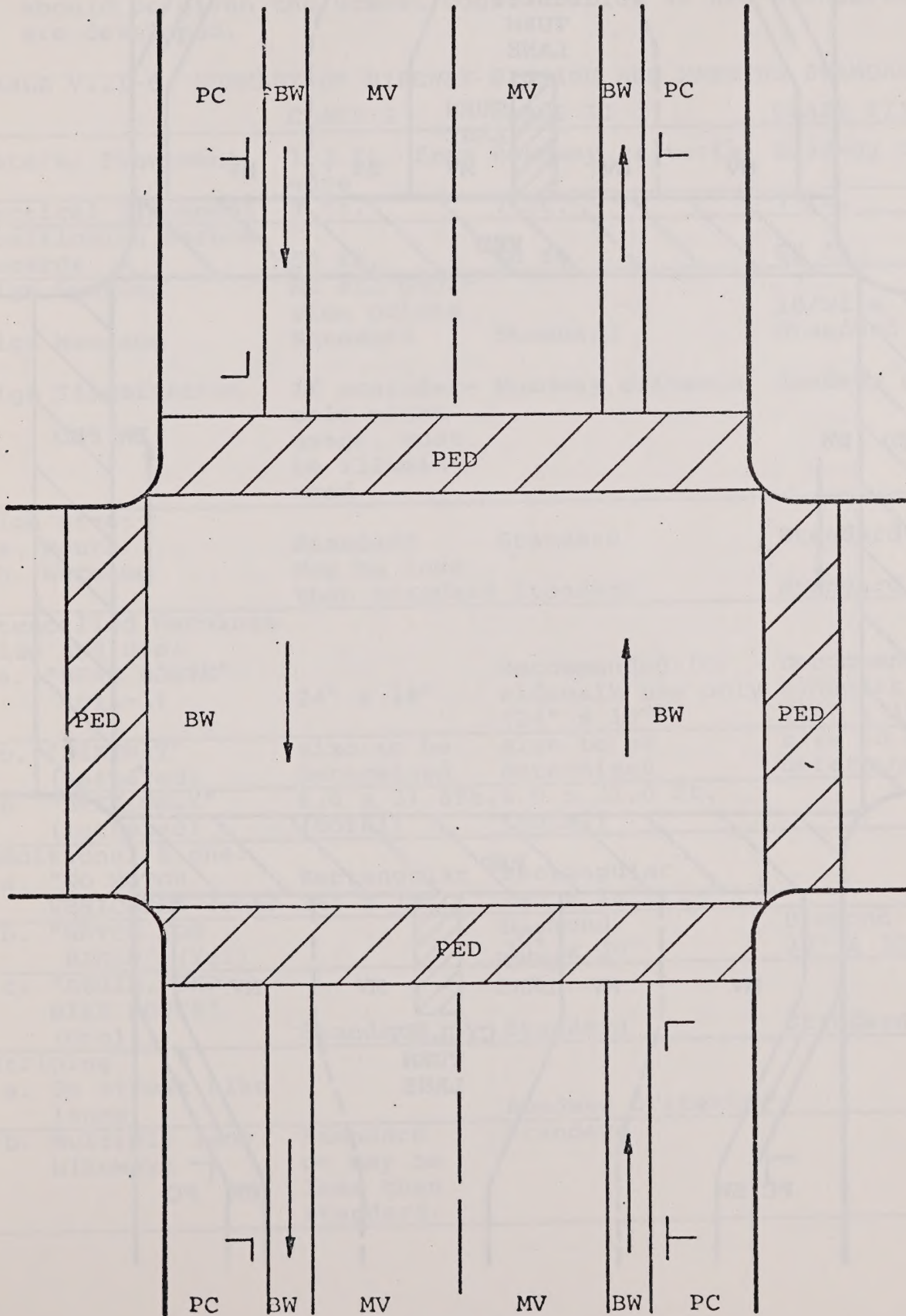
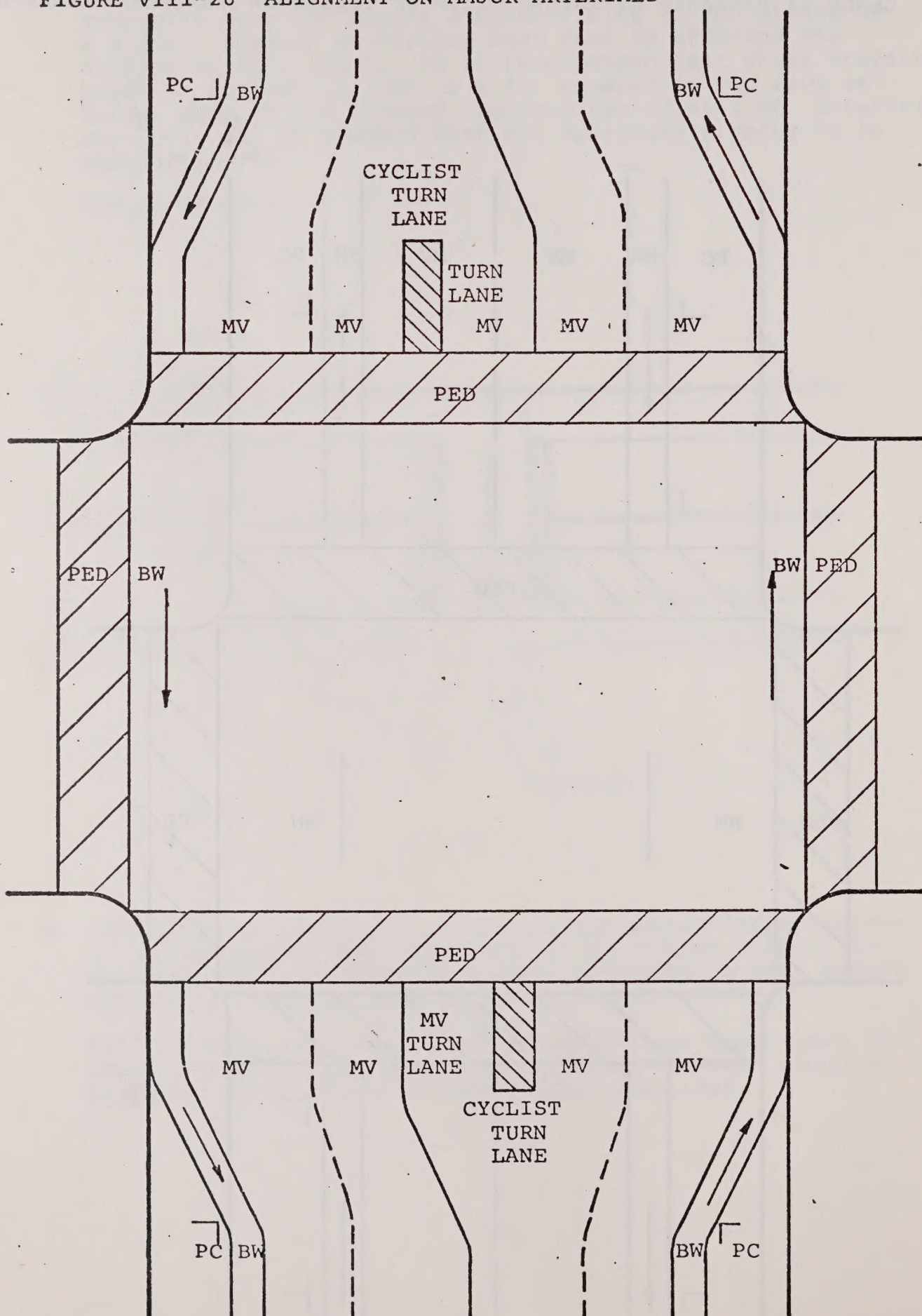


FIGURE VIII-26 ALIGNMENT ON MAJOR ARTERIALS



The two recommendations, Figures VIII-25 and 26, for intersection design are examples of the kind of demarkation necessary in order to provide optimum safety on city bikeways. While conditions will vary from intersection to intersection, the need for further study of intersection design is great, and land and traffic use will continue to change, the basic need to define the right-of-way of the cyclist remains and should be given the utmost consideration as new standards are developed.

TABLE VIII-6 SUMMARY OF BIKEWAY SIGNING AND MARKING STANDARDS

	CLASS I	CLASS II	CLASS III
Lateral Placement	1-3 ft. from Roadway criteria edge	Roadway criteria	Roadway criteria
Vertical Placement	7 ft.	7 ft.	7 ft.
Positioning before hazards	50 ft.	50 ft.	50 ft.
Sign Spacing	At all decision points		10/mile
Sign Message	Standard	Standard	Standard
Sign Illumination	If considerable night usage, must be illuminated	Roadway criteria	Roadway criteria
Sign Size:			
a. Route	Standard	Standard	Standard
b. Warning	May be less than standard	Standard	Standard
Stencilled Warnings			
Size and Use:			
a. "BIKE ROUTE" (D11-1)	24" x 18"	Recommended for sidewalk use only (24" x 18")	Recommended for sidewalk use only (24" x 18")
b. "BIKEWAY" (lettered)	size to be determined	size to be determined	size to be determined
c. "BIKE ONLY" (lettered)	6.0 x 31.0ft. (total)	6.0 x 31.0 ft. (total)	
Additional Signs:			
a. "NO MOTOR VEHICLES" (wht)	Rectangular 24" x 18"	Rectangular 24" x 18"	
b. "WATCH FOR BIKES" (Yel)		Diamond 30" x 30"	Diamond 30" x 30"
c. "BEGIN, END BIKE ROUTE" (Grn)	Standard	Standard	Standard
Striping			
a. On street bike lanes		Roadway criteria	
b. Multiple lane bikeways	Standard or may be less than standard.	Standard	

TABLE VIII-6 SUMMARY OF BIKEWAY SIGNING AND MARKING STANDARDS

	CLASS I	CLASS II	CLASS III
Bikeway/Roadway Intersections			
a. Street crossings	Standard 1' x 1' painted squares	Standard	
b. Pedestrian Xings	Break in the BW line to indicate PED ROW dominance - line continues through intersection		
c. Left hand turn lane		Hash markings in "pocket" lane	

O. Facilities, Existing and Proposed. This section will discuss the use of many of the various facilities which exist in Lompoc which do or can serve the cyclist as part of his daily routine or weekend jaunt.

1. Parks and Playgrounds. While Lompoc has many parks which are frequented by cyclists, Ryon Park by far attracts most of those who do ride for park-type recreational goals. The use of a facility like Ryon Park will take many hours of planning, but a few general observations should be noted at this point.

Separation of the cyclist from the pedestrian park user is essential in order to avoid conflicts of use, but the cyclist should have access to all of the functions of the park. To implement this, the use of existing landscape and physical barriers between play areas, picnic areas, etc. should be maximized as cyclist/pedestrian separators. Secondly, bike terminal facilities should be located on the critical points of interest such as tennis courts, baseball diamonds, restrooms and the like. Thirdly, the bicycle should be allowed to enter areas restricted from auto entry, but adequate provisions should be made to discourage use of pedestrian facilities by bikes.

The use of park facilities will necessitate some changes of street and sidewalk structure around park entrance. Bicycles have not yet adapted to climbing high curbs, for example, and provisions will necessarily be made. Curb cuts for bikeway users will probably be the most feasible solution as ramps projecting into the right-of-way are not desirable (see illustrations).

FIGURE VIII-27.

Curb Cut for Entry From a Head-on Position.

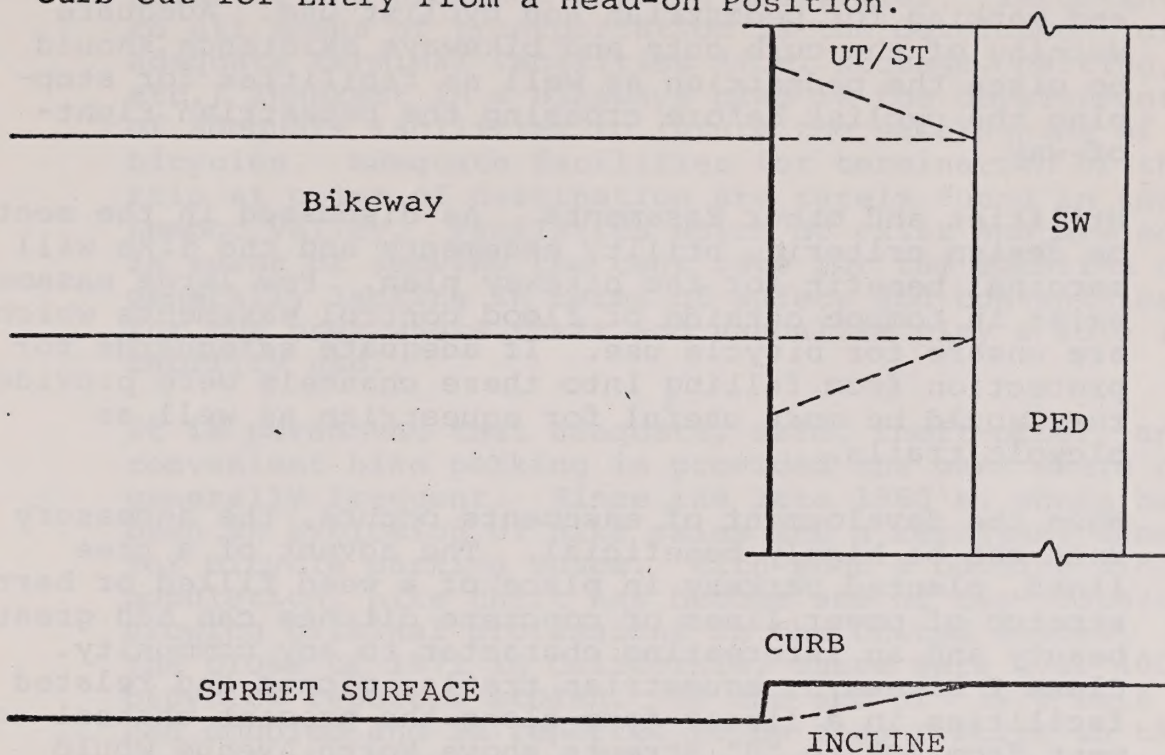
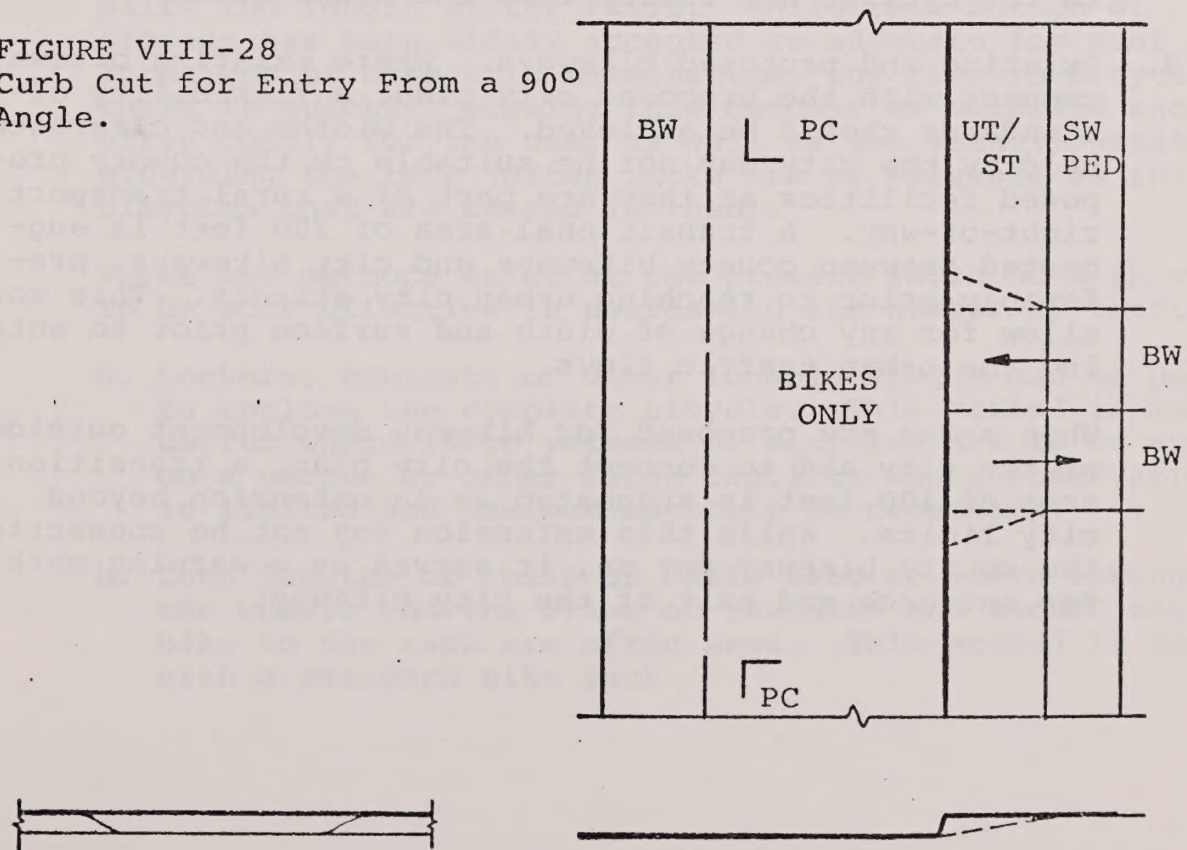


FIGURE VIII-28

Curb Cut for Entry From a 90° Angle.



The above curb cuts will necessitate adequate signing and marking for pedestrian and cyclist use. Adequate warning of the curb cuts and bikeways existence should be given the pedestrian as well as facilities for stopping the cyclist before crossing the pedestrian right-of-way.

2. Utilities and other Easements. As discussed in the section on design criteria, utility easements and the like will have marginal benefit for the bikeway plan. Few large easements exist in Lompoc outside of flood control easements which are unsafe for bicycle use. If adequate safeguards for protection from falling into these channels were provided, they would be most useful for equestrian as well as bicycle trails.

When the development of easements occurs, the accessory uses can be highly beneficial. The advent of a tree lined, planted parkway in place of a weed filled or barren stretch of power lines or concrete ditches can add great beauty and an interesting character to any community. Class I bikeways, equestrian trails, picnic and related facilities in a linear form along the present channel easement from "O" to "H" Streets above North Avenue would create a great asset to the residential and commercial growth intended for this area, rather than the aesthetic liability which exists presently. In this type of area, the standards used to develop a bikeway should be flexible to take advantage of what natural contours and landscaped features exist. A straight line bikeway with rigid adherence to straight, hard features adds neither pleasure to the cyclist nor relief from the urban scene.

3. Existing and proposed bikeways. Where existing bikeways connect with the proposed city plan, a flexibility of standards should be achieved. The widths and clearances held by the city may not be suitable to the county proposed facilities as they are part of a rural transport right-of-way. A transitional area of 200 feet is suggested between county bikeways and city bikeways, preferably prior to reaching urban city streets. This would allow for any change of width and surface prior to entering the urban traffic flows.

When areas are proposed for bikeway development outside of the city and to connect the city plan, a transitional area of 100 feet is suggested as an extension beyond city limits. While this extension may not be connecting the county bikeway per se, it serves as a warning marking for entrance and exit of the city bikeway.

4. Existing and proposed parking facilities. Important to all modes of transportation is the development of adequate terminal facilities (i.e. storage, parking, etc.) Inherent in a bikeways plan is the development of adequate facilities to insure the safekeeping of parked bicycles. Adequate facilities for termination of the trip at point of destination are rarely found in the Lompoc Valley. Facilities which do exist and are adequate in terms of serving the user rate for the location are generally lacking in terms of safety and convenience for the user where theft and vandalism play a role in facility use.

It is paramount that adequate, safe, theft-proof, and convenient bike parking is provided the user where cyclists generally frequent. Since the late 1960's, there has been an explosion of bike sales and a resultant demand for bicycle parking space. With such a booming bicycle population, bike theft has become one of the fastest growing criminal professions in the United States. At the close of 1971 in California, there were over 400,000 bicycles reported stolen. By the end of 1972 this figure had doubled and is reported to be conservative in that many of the bicycles which are stolen are never reported to police or insurance companies.

The first question that comes to mind is, What can be done about bicycle thefts? Presently, bicycle terminal facilities are generally referred to as bike racks and consist of three lateral rails connecting the ends of inverted "T" structural components which are spaced in pairs the length of the rails. While this method of storage has been widely accepted as adequate for most locations of bike trip termination, the rise in bicycle theft is quickly proving this concept as outmoded and often costly for the user as well as the establishment providing the rack (often racks are as valuable as the bicycles that are stored in them).

Three new methods exist at the present which have shown to be most effective in decreasing the number of thefts.

- a. Lockers, cabinets or other locable spaces can be used to enclose the complete bicycle. This method is most useful where large volumes of bicycles are to be stored on a campus or other large facility where observation is limited and maximum security is necessary.
- b. Long lengths of chain or cable used to weave through the wheels and the frame of the bike and anchor the bike to the rack are often used. This method is used with a standard bike rack.

c. A ground implanted chain, ring or steel loop to lock the bike to the ground is also used. This method is becoming more frequent in its use, especially by public facilities and commercial establishments.

While these methods are generally better than a single lock on the bike rack of old, they each have their drawbacks. Method 1 is quite expensive and should only be considered where schools, industrial centers and related large facilities are to be built or the use rate is so great in an area that it warrants such a facility. Method 2 is highly usable with the exception that such a chain or cable can add quite a lot of weight and often, more weight than the bike itself. Method 3 is reasonably better than the others except that with a ground mounted chain or ring, the remainder of the bicycle can be removed while leaving the locked wheel or frame locked in place.

There is a fourth method which encompasses many of the first three methods and has some innovations which are new to the terminal facility business. The "racks" if they can be called that, have ground mounting assets, long chain or cable assets, and the ability to be coin operated if desired. These racks are produced commercially and range in cost from \$12. to \$110 per rack. The accompanying brochure contains the design fundamentals, model variations and parking facility design suggestions.

Generally, it is best to have bicycle parking facilities nearest to the attraction which it purports to serve. Commercial areas of large numbers of stores and offices would probably be best to eliminate one or two parking spaces every ten aisles and provide a suitable bike rack for patrons. In smaller commercial centers of 30 to 50 parking spaces, one or two bike racks for the entire facility serving 10 to 20 bicycles would be highly sufficient. The smallest of commercial establishments would normally not serve bicycles except for such used as hobby shops, barbers, apparel shops or hamburger stands. Here, provisions for from 3 to 5 bicycles would be suitable. When in doubt, a good rule of thumb would be to count the number of bicycles or cyclists using a commercial establishment or center during peak cycling hours. (The peak cyclist hours for a hobby shop, for example, might be between 3:30 and 4:00 P.M. after schools are out). The peak hour count over a couple of weeks would provide an average daily user rate. Provisions should be made for bike parking at or about this average figure, but never less than 3 spaces for a small individual establishment with some cyclist patronage.

Other areas such as public facilities (city hall, schools, pools, etc.) and industrial and public or private service establishments should provide bike racks according to the number of cyclists employed and/or the average number of cyclists who may frequent the establishment. Where possible, it is advised that the various establishments pool

RALLY RACK BRACE

For easier installation. Six units bolt to the ground, then brace is bolted to ground, like the Model 100. Brace can be free standing.

THE MODEL 200

Similar to the Model 100 but adds **front wheel protection**. One end of a coated, steel wire cable is permanently affixed to the rack; the other end is passed through the front wheel of the bike, then slipped onto the cyclist's padlock. Cable coils neatly when not in use.
SPECS: Rack—same as Model 100. Cable—5 ft. (extended). Diameter—3/8". Approx. weight—9 1/2 lbs.

THE MODEL 300

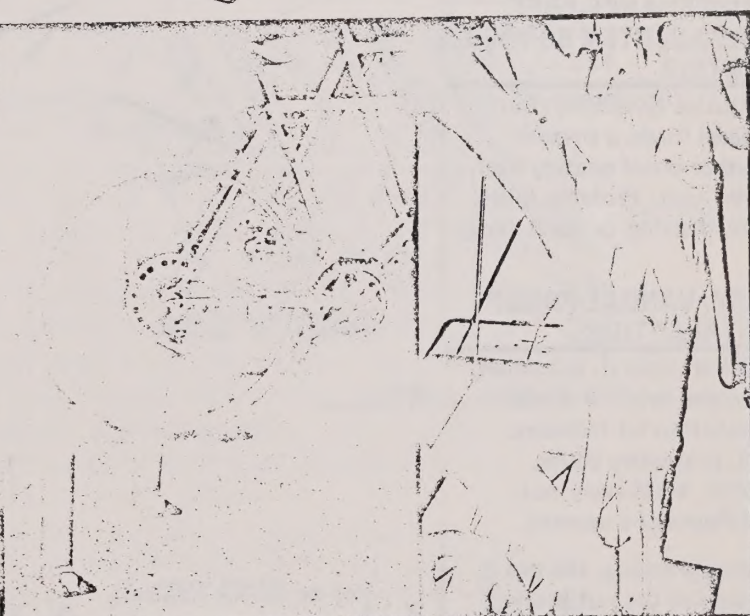
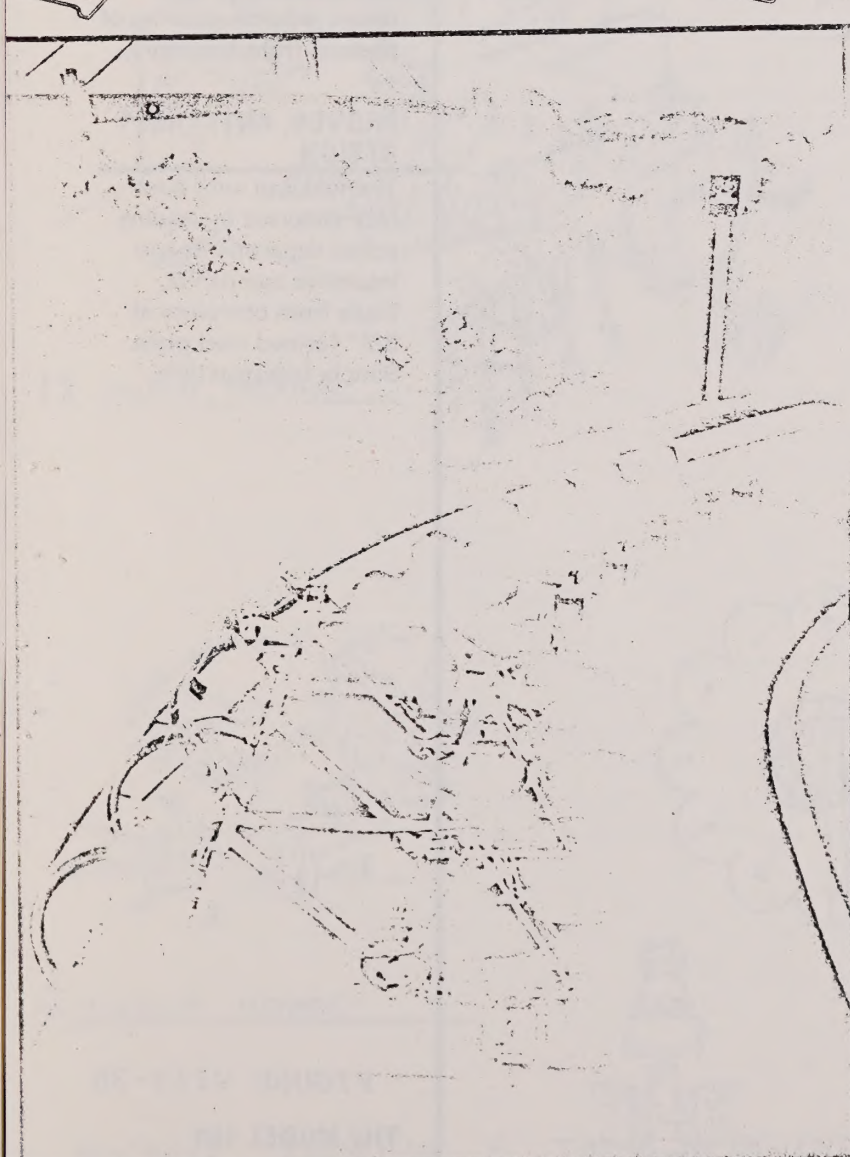
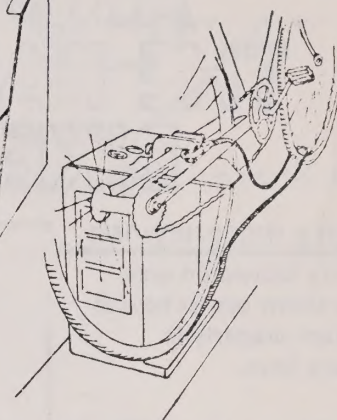
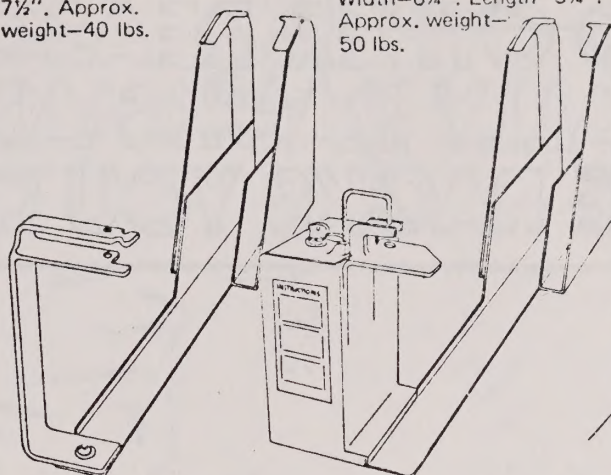
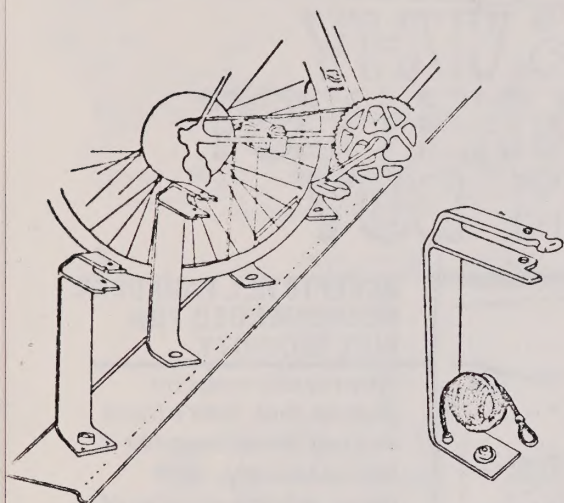
The ultimate in bike protection. Frame and rear wheel security of the Model 100, with the addition of formed 11 gauge steel plates to provide absolute front wheel protection. Nylabond finish protects unit. Easy, two-bolt installation.
SPECS: Model 100, plus front wheel housing (chassis). Color—Ecology Green. (Custom colors available). Chassis: Height—17". Length—38". Width—7 1/2". Approx. weight—40 lbs.

THE MODEL 400

Maximum security "coin operate" lock. Ideal for public parking. Offers outstanding financial returns. Like the Model 300, with the addition of a reliable self-contained key/coin operated locking mechanism. Coin box is a high security pick-proof vault with a heavy 12 gauge steel faceplate. (Flexible leasing and financing programs available.)
SPECS: Same as Model 300. Coin Box Vault: Height—12". Width—6 1/4". Length—5 3/4". Approx. weight—50 lbs.

THE MODEL 500

A "coin operated" rack, like the Model 400, but with a steel wire cable for front wheel protection, like the Model 200. (Flexible leasing and financing programs available.)
SPECS: Height—12". Width—6 1/4". Length—5 3/4". Cable—5' ext. Weight approx. 16 lbs.



RALLY RACKS.

The best bike rack you can buy!

For more information, contact:

Rally Enterprises Inc.

Box 601, Mill Valley, Ca. 94941. (415) 388-8488

Represented by:

"WE'VE NEVER LOST A BIKE."

AND OTHER REASONS WHY THE RALLY RACKS ARE THE BEST BIKE RACKS YOU CAN BUY

SIMPLE INSTRUCTIONS

Clearly located on each unit; shows cyclist how to use rack properly in picture form.

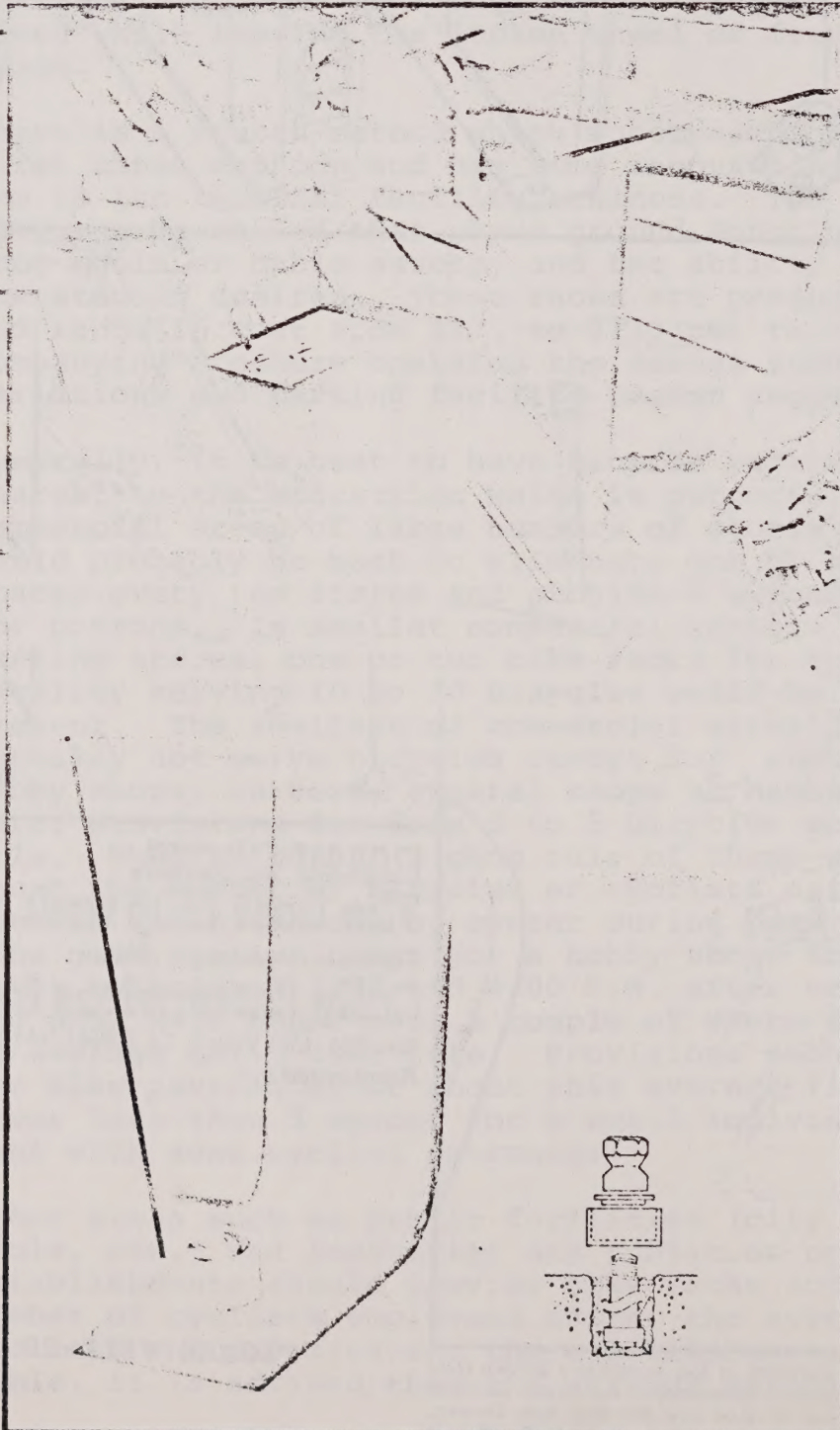
MAINTENANCE-FREE, PERMANENTLY BONDED COATING

Exclusive Nylabond (TM) process forms a smooth weather-proof coating over entire unit. Protects bikes from marring or scratching.

EASY, VANDAL-PROOF INSTALLATION

One bolt does it, in asphalt, concrete, brick or wood! Installation kit includes: bolt, protective collar, washer, breakaway nut, and Pourstone cement.

After tightening, the top portion of the nut breaks off, leaving a flush collar. Prevents anyone from stealing the rack itself.



ACCEPTS ALL PADLOCKS RECOMMENDED FOR BIKE SECURITY

When cyclist snaps his padlock shut, bike's frame and rear wheel assembly is locked securely. Rack design protects shackles of padlock from tampering.

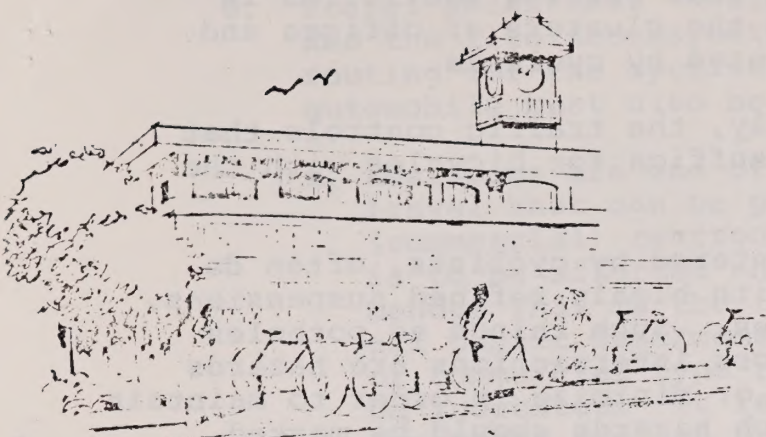
PROVEN, ANTI-THEFT DESIGN

The first and only bike rack endorsed by leading police departments and insurance companies. Made from one piece of 3/8" formed steel plate. Simply indestructible.

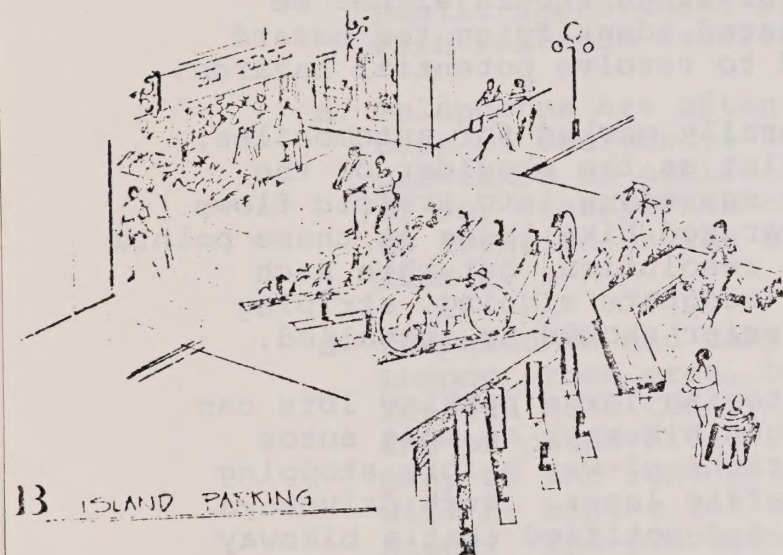
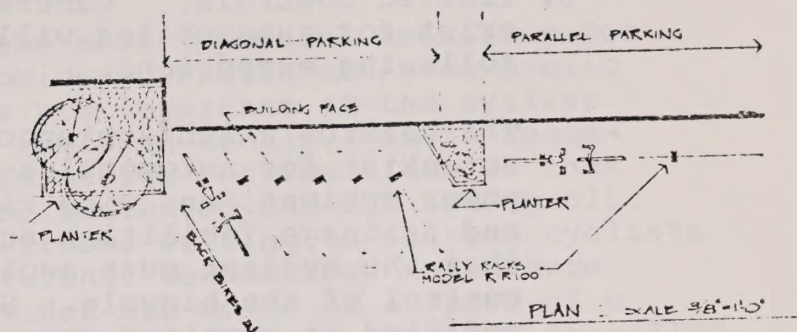
FIGURE VIII-30

THE MODEL 100

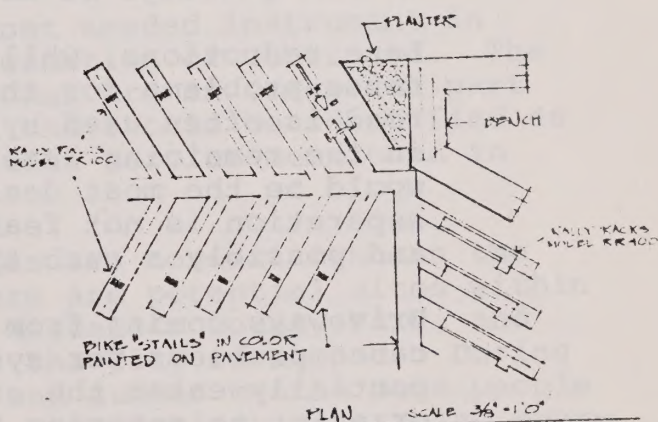
Specifications: Height—14". Width—7". Approx. shipping weight—9 lbs. Color—Black. (Optional colors available.)



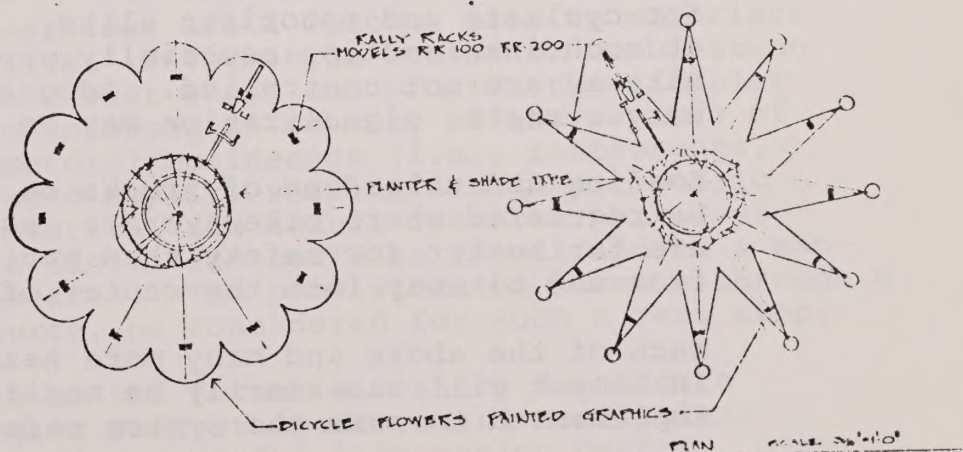
A INSTALLATION ALONG A WALL



B ISLAND PARKING



C BICYCLE FLOWERS



BICYCLE PARKING & THEFT PREVENTION

RALLY RACKS

their resources and provide bike parking facilities in convenient areas central to the clusters of offices and businesses which are frequented by cyclists.

5. Traffic controls. Generally, the traffic controls that exist for automobiles will suffice for bicycles with the following exceptions.

The hazards which are encountered by cyclists, often do not exist for automobiles with highly refined suspensions, power options, and wide tires. Such things as potholes and drainage facilities across intersections are hazards that the cyclist must avoid or minimize in order to maintain control of the bicycle. Such hazards should be marked, modified or repaired where practicable.

Drainage gratings generally are parallel to bicycle movement with separations slightly wider than the average bicycle tire width. These gratings should either be marked and warning signs placed identifying the hazard or the gratings be modified to resolve potential hazards.

Lane reductions, while generally marked for automobiles, cause problems for the cyclist as the shoulder of the road is often used by autos squeezing into traffic flows in the remaining lane. Separated bike lanes at these points would be the most desirable resolution, but when such separation is not feasible, adequate signing, striping and possibly a curb type barrier should be installed.

Driveways coming from or entering large parking lots can cause problems for cyclists on bikeways as most autos partially enter the street right-of-way before stopping or prior to entering the traffic lanes. Such driveways should be adequately marked and notified that a bikeway is located across the entrance.

Uncontrolled intersections are an easily remedied problem for cyclists and motorists alike. Many problems occur at such intersection especially when turns crossing the bikeway are not controlled. Adequate signing, and on busy streets, signalization may be called for.

Loading and unloading of trucks on city streets should be regulated where bikeways are installed. Loading zones are far better for safety than having a bicycle forced from the bikeway into the center of the street.

Each of the above and many more hazards for the cyclist in Lompoc will necessarily be modified or traffic controls implemented to make the system safe.

6. Travel amenities. While provisions for safety, convenience and the like necessitate the use of wide streets and direct routing for the cyclist, travel amenities afforded the automobile must also be afforded the cyclist.
- a. Restrooms are one of the most important amenities for travel that can be provided. Public and semi-public (commercial) restrooms are important if the cyclist is to be afforded any comforts at all. It is recommended that in the information service (Item e) that all public restrooms be indicated and all semi-public or commercial type restrooms willing to service cyclists be indicated. It is further recommended that where restrooms are not provided and could be as part of a public service or improvement program, they are installed.
 - b. Drinking fountains are rarely found in the city outside of parks and playgrounds. It should be part of any public improvement program to include drinking fountains with restroom facilities.
 - c. Telephones are often the most needed instrument in case of emergency, for information or other use. The provision of public telephones are an essential part of any transportation plan and should be identified as to location on the information service mentioned in Item e.
 - d. Campgrounds and camping uses are non-existent in the Lompoc urban area, but there are potential sites within Kenneth Adam County Park, Miguelito County Park, and the proposed River Park of the City of Lompoc. During many of the long holidays and summer months more people will be biking for camping type outings or staying overnight. The provision of adequate camping facilities should be examined and provided where large parks or natural areas could afford such use.
 - e. Information services are a welcome site to motorists and bikers alike. Information booths or combination information and rest stops can provide the traveler with valuable information on many of the aspects of Lompoc. Commercial businesses (i.e., restaurants, bike shops, auto repair, service stations), public services, historical and scenic features, bikeways and many more facilities could be identified on a map of the Lompoc area. The provisions of Items a through d would, of course, be considered for such a rest stop.

As an example of the format necessary for such a facility, Ingram Park at Grefco would easily lend itself to becoming a useful information center. Other information type stops could be placed at the Wye and at the Central Avenue off-ramp of the proposed freeway bypass. Such facilities in other communities provide a great service for the cyclist and motorist alike, as well as the local businessman when the commercial and service areas of the city are outlined.

PART IX - THE LOMPOC BIKEWAY PLAN.

A. County Plans.

The County of Santa Barbara has adopted a bikeway plan for the Fourth Supervisorial District, excluding the City of Lompoc. The county routing plan provided for routings over the entire Fourth District of which the following routes are of importance to the city.

1. Miguelito Canyon Road connecting Lompoc with Miguelito Park.
2. Ocean Avenue connecting Lompoc to Ocean Park.
3. From Grefco to La Purisima Mission along Route 246.
4. Union Sugar Road from Route 246, to Central Avenue, and from Central Avenue to and through the northern edge of Lompoc.
5. Lompoc to Buellton along Route 246.
6. Paralleling the proposed river parkway from points south to points north of Lompoc.
7. From Ken Adam Park to Lompoc city limits near "H" Street and dividing to join Floradale and "A" Streets.

The above routes have been adopted (with some modifications) by the County as part of the General Plan.

B. State Plans.

The State of California, Department of Transportation has adopted a bicycle plan for the Highway 101 area from Monterey to Santa Barbara area. At present this will not affect the Lompoc Plan as the State proposed bike routes do not approach this area.

C. The Backbone Route.

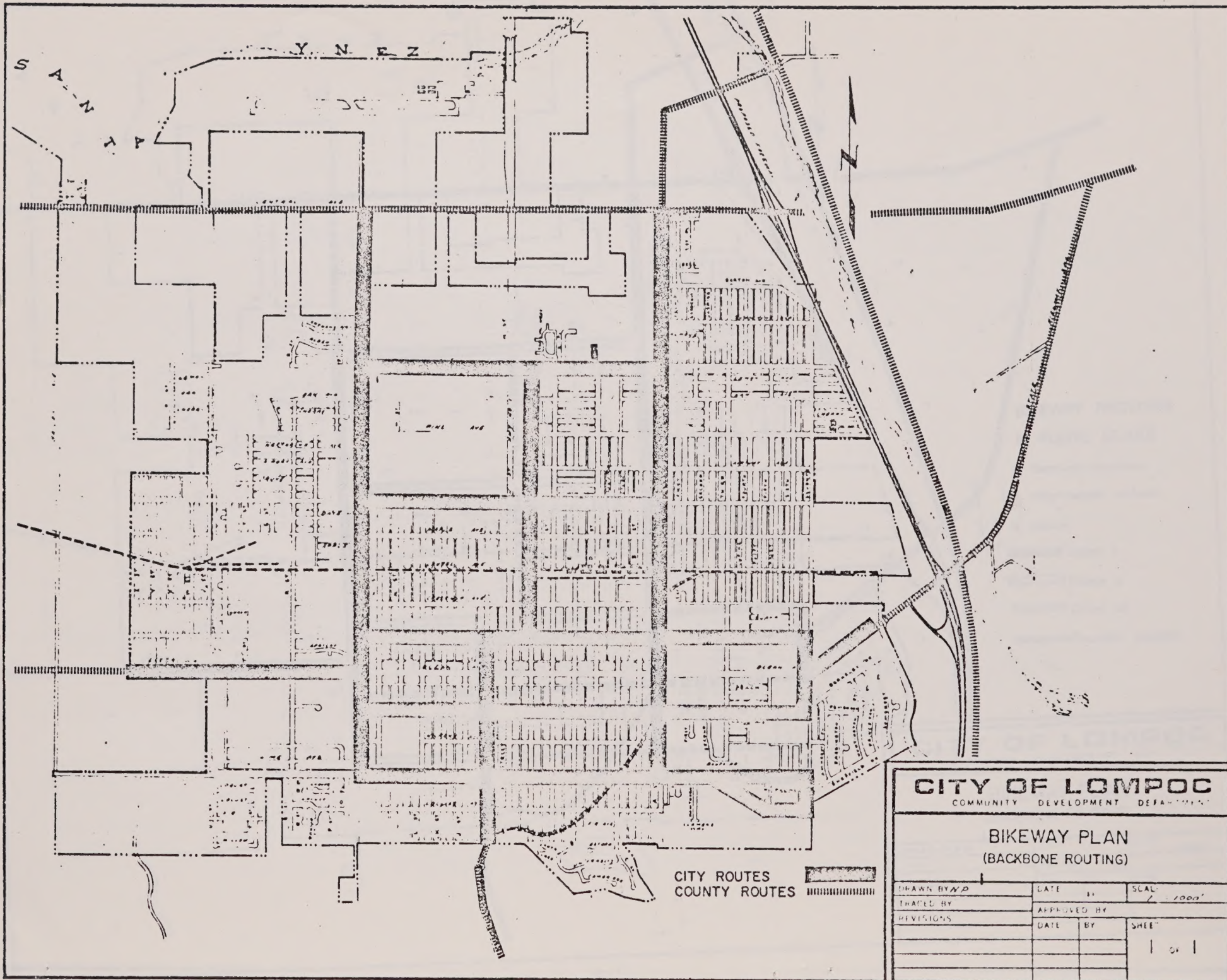
The purpose of this primary phase of bikeway planning is to provide a backbone system of bikeways which:

1. Connect the county plan through the City of Lompoc;
2. Provide minimal access to community activity centers of highest bicycle/cyclist use; and
3. Provide input on facilities of necessity or desirability in connection with the County and City bikeway plans as well as other programs of city interest.

The plan routes are based upon the data presented in the data base and design standard portions of the plan. These routings represent the most feasible means of providing safe bicycle flow to and through the City. While providing the above services to cyclists, the plan also serves the future of one portion of transportation in Lompoc and will be added to when future studies and plans are completed.



The plan today was to start from the first point of the plan. These points were the main points of the plan. The first point was the first point of the plan. The second point was the second point of the plan. The third point was the third point of the plan. The fourth point was the fourth point of the plan. The fifth point was the fifth point of the plan. The sixth point was the sixth point of the plan. The seventh point was the seventh point of the plan. The eighth point was the eighth point of the plan. The ninth point was the ninth point of the plan. The tenth point was the tenth point of the plan. The eleventh point was the eleventh point of the plan. The twelfth point was the twelfth point of the plan. The thirteenth point was the thirteenth point of the plan. The fourteenth point was the fourteenth point of the plan. The fifteenth point was the fifteenth point of the plan. The sixteenth point was the sixteenth point of the plan. 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CITY OF LOMPOC COMMUNITY DEVELOPMENT DEPARTMENT

BIKEWAY PLAN (BACKBONE ROUTING)

DRAWN BY: <i>W.D.</i>	DATE: <i>11</i>	SCALE: <i>1" = 1000'</i>
THAWED BY:	APPROVED BY:	
REVISIONS:	DATE:	BY:
		SHEET: <i>1 of 1</i>





CITY OF CHICAGO

OFFICE OF THE CITY CLERK

OFFICE OF THE CITY CLERK

E. Explanation of Backbone Routing:

The backbone routing consists of approximately 12.8 miles of marked bikeway with 0.2 miles of Class I routes, 9.6 miles of Class II routes and 3 miles of Class III routes. In order to provide a full description of the routing, the following chart has been prepared describing each of the routes, their distance, traffic volume ranges, widths of right-of-way and pavement, and general comments.

TABLE IX-1

CLASS I BIKEWAYS

<u>Name</u>	<u>Location</u>	<u>Distance (One Way)</u>	<u>Estimated Bike Traffic Volume</u>	<u>Minimum Bikeway Pavement Width</u>	<u>Comments</u>
Beattie Park	Olive Ave. & Third St.	1,000 ft.	Max. 1,000/day	7.75' one way	To be developed with Beattie Park project.

CLASS II BIKEWAYS

<u>Street Name</u>	<u>From</u>	<u>To</u>	<u>Distance</u>	<u>Auto Volume Daily</u>	<u>Pavement Width</u>	<u>Right-of-Way Width</u>	<u>Comments</u>
"A" St.	Olive	Cypress	1,200 ft.	2,000	61.5 ft.	80 ft.	Various roadway configurations will be necessary to apply bikeways in this section.
"A" St.	Cypress	Chestnut	1,850 ft.	5,000	61.5 ft.	80 ft.	
"A" St.	Chestnut	North	4,100 ft.	5,000	64 ft.	80 ft.	County connector.
"A" St.	North	Central	2,700 ft.	4,000	62-64 ft.	55-80 ft.	
College	"A"	"O"	5,400 ft.		64 ft.	80 ft.	
"I" St.	San Mig-uelito Rd.	Walnut	3,600 ft.	2,000			County connector
North Ave.	"A" St.	"O" St.	5,400 ft.		44-64 ft.	80 ft.	
"O" St.	Olive	Ocean	1,800 ft.	2,000	44 ft.	80 ft.	
"O" St.	Ocean	Laurel	1,800 ft.	3,000	64 ft.	80 ft.	
"O" St.	Laurel	Oak	2,950 ft.	2,000	44 ft.	60-80 ft.	

<u>Street Name</u>	<u>From</u>	<u>To</u>	<u>Distance</u>	<u>Auto Volume Daily</u>	<u>Pavement Width</u>	<u>Right-of-Way Width</u>	<u>Comments</u>
"O" St.	Oak	North	600 ft.	2,000	64 ft.	80 ft.	
Ocean	West of City Limits	"O" St.	4,000 ft.	4,000	78 ft.	100 ft.	County Connector
Ocean	Seventh	San Julian Rd	3,000 ft.	4,000			County Connector
Olive	"O" St	"G" St	3,100 ft.	2,000	44-55 ft.	80 ft.	
Seventh	Walnut	Cypress	1,200 ft.	2,000		65-76 ft.	
Walnut	"A" St	"O" St	8,400 ft.	2,000	44-55 ft	80 ft.	
<u>CLASS III BIKEWAYS</u>							
"D" St.	North	Library Park- ing lot	300 ft.		22 ft.	64 ft.	Should design bike parking at entrances to Library
"G" St	Walnut	North	4,700 ft.	2,000	Varies	40-80 ft.	Will require street improve- ments and traffic controls.
Locust & 7th	Fifth	Olive		1,000	Varies	40-60 ft.	Street completion required.
"O" St.	North	Central	2,700 ft.	1,000	24 ft.	80 ft.	County connector.
Olive	"G" St	Seventh	4,900 ft.	2,000	28-44 ft.	80 ft.	
Walnut	"A"	Seventh	2,600 ft.	1,000	44 ft.	80 ft.	
Cypress	"O"	Seventh	11,000 ft.				Should be upgraded to Class II from "A" to "O" after completion of Public Works projects in 1975

F. The Long Term Planning Program.

It is axiomatic that when a "backbone" plan is developed, a long range planning program will also be developed. At this time, the Lompoc Bikeway Committee is working on a long range planning program for the development of bikeways. The analysis of data yet to be obtained will provide information on a comprehensive system of bikeways to serve the community and to be developed over the next twenty years. This comprehensive system should serve:

1. Schools;
2. Shopping areas;
3. Industrial centers;
4. Recreational and related activity centers;
5. Public facilities;

at a level commensurate with bicycle use and potential in Lompoc.

PART X - FUNDING.

A. Allocation of the Local Transportation Development Act of 1971 (SB325).

Recently, State Legislation, in the form of SB 821, was enacted which requires that up to 2% of the funds made available through SB 325 must be expended on facilities provided for the exclusive use of bicycles and pedestrians.

The priority for expenditure of the SB 325 funds as modified by SB 821 is as follows:

1. Necessary costs for the County Auditor to administer the Act,
2. Necessary costs for administration by the Transportation Planning Agency,
3. Up to 3% of the funds for Transportation Planning,
4. Up to 2% of the remaining funds for facilities for the exclusive use of pedestrians and bicycles,
5. Article 4 claims (public transportation).
6. Article 8 claims (street and roads).

At the present time the City of Lompoc is receiving monthly allocations of SB 325 funds. On an annual basis these funds for 1972-73 amounted to \$262,327.07 of which \$5,089.15 could have been applied to bikeways and pedestrianways. For 73-74 (if present figures hold for the remainder of the year) \$5,020.28 should be applicable to bikeways and pedestrianways. Recently changes to the priority allocations have been made and by City Council action, more than the 2% of the remainder can be allocated to bikeways development. It would appear that no specific limits to bikeway development funding would be applicable.

- B. While some State and Federal funds are becoming increasingly available for the development of bikeways, some of the funding for Lompoc bikeways in terms of the backbone route facilities will depend upon the development of local funding measures. Two areas of development seem to have the greatest potential to meet the needs of the backbone route and the development of the long range in the near future.

1. California Vehicle Code. The California Code entitles the local entity to enforce both State vehicle code and local ordinance. Under these provisions the licensing of bicycles is a local function which can produce revenue for the local agency and assist in fighting the problems of bike theft. A mandatory program of bike licensing within the city would produce both revenues to cover the cost of administration, and assist in the development of the bikeways plan on a continuing basis.

1. Along with the licensing of bicycles, comes the enforcement of the vehicle code. The cyclist is given, under the California Code, both the rights and the responsibility of the motorist in terms of the use of the right-of-way. Motorists are given the responsibility at a minimum age of sixteen after passing written and practical instruction. Cyclists are given the same consideration without the benefits of this education at ages as low as four and five years. While much has been done in the Lompoc area in terms of educating the youth of the community through the school system, little has been accomplished to drive this important education home. We have also neglected to educate the older cyclist of his rights and responsibilities and this is also quite apparent. The violation of major traffic law provisions is becoming more commonplace daily. Serious accidents and many near accidents are growing as rapidly as bike sales. The need to establish the traffic law in the minds of all cyclists brings about the need to develop a system of traffic fines and penalties aimed at rapid education of the violator. By the enforcement of the code for cyclists, the community might also develop a greater understanding for the bicycle as a transportation mode while diverting some portion of the collected fines and penalties to the development of both bikeways and a stronger education system for youth and adult alike.
2. The Donation Fund. Funds for bikeways will not be established easily outside the realm of taxes and the general fund, but with the proper publicity and "sales" campaign, it is felt that some funds could be managed. Any donation fund for bikeways will need the support of local public officials and adequate media coverage. Much of the development fund would originate with users rather than the motorist, but it is felt that many people, if given the opportunity to examine the benefits of a bikeways system in the community would support such a fund.

C. Bikeway costs. The following cost breakdown are based upon labor, materials and associated costs presently used. These costs, when computed to the estimated costs or providing Class I, II and III facilities, are liberal in that existing signing, stencillings, traffic controls, etc., which would supply the necessary media by the standards of this plan have not been subtracted from the total costs.

Item costs.

1. Bikeway paving.

\$0.50 sq. ft. or a four lane Class I bikeway of standard 15.5 ft. width would cost \$41,000 per mile.

2. Bikeway lane painting.

(a) Lane lines, first painting \$105 per mile on a one lane bikeway (one side only). Both sides, \$210 per mile.

(b) Repainting, \$55 per mile on a one lane bikeway (one side only). Both sides, \$110 per mile.

3. Pavement stencilling.

(a) First painting per stencil - \$3. each - estimated 20 stencils per mile, 2 ways = \$60. per mile.

(b) Repainting per stencil - \$2. each - estimated 20 stencils per mile, 2 ways = \$40. per mile.

4. Sign installation.

(a) \$15. per sing @ 10 signs per mile, one way = \$150. per mile. or \$300. per mile, two ways.

(b) \$20. per sign @ 10 signs per mile, one way = \$200. per mile or \$400. per mile, two ways.

(c) \$25. per sign @ 10 signs per mile, one way = \$250. per mile or \$500. per mile, two ways.

(d) An average of 50% of all signs will cost \$25. each, while 25% will cost \$15. and \$20. each. The resultant average cost per mile considering a two way bikeway is \$425. per mile.

5. Paint removal.

It will be necessary to remove some paint from street surfaces to apply bikeways.

(a) Remove double yellow line - \$400. per mile.

(b) Single line - \$250. per mile.

(c) Dashed line - \$200. per mile

(d) Stencil - \$20. each.

All costs include normal maintenance, rental, etc. of equipment.

The following costs are for the establishment of each segment of the bikeway as defined by Class I, II and III type facility proposed in the plan.

Class I bikeway - 0.2 miles length

Paving	\$8,200.
Lane marking (4 lanes)	70.
Pavement stencils (8 stencils)	24.
Signing (6 signs)	128.
	<u>\$8,422.</u>

Class II bikeway - 9.8 miles length

Signing (196 signs (estimated)	\$4,165.
Pavement stencilling, (196 stencils estimated)	\$ 588
Bikeway striping (2 sides)	2,016.
Paint removal*	
*Note: Includes paint removal and repainting of parking markers, lane lines, etc. at an estimated 2½ miles of street changes to double, single, dashed lines and 180 stencils.	
	7,265.
Total	<u>\$14,034.</u>

Class III bikeway - 5 miles length.

Signing (100 signs estimate)	\$ 2,125.
Stencils (100 stencils, estimated)	300.
Total	<u>\$ 2,425.</u>

Additional facilities.

a. Information centers.

- (1) Ingram Park conversion estimated - \$4,000.
- (2) New facilities including land
acquisition, landscaping, con-
struction in accordance with
plan proposal @ \$16,000 ea \$32,000.

b. Public bike racks (various designs) 2,000.

c. Changes to drainage gratings and similar hazards on route including removal of parking, increased off-street parking, providing loading zones, etc. \$ 6,000

Total \$44,000

The total project cost as estimated by the liberal standards used in the analysis of necessary changes and new facility development, including Class I facilities through Beattie Park (assuming the park's completion within the three year time frame for bikeway development) is \$62,486. If equalized out over the proposed three year implementation period (including 6.5% annual rise in the C.P.I.), the three year establishment costs would appear as follows:

First Year.

Implement Class II bikeways	\$14,034.
Implement Class III bikeways	2,425.
Provide public bike racks	1,000.
Changes to gratings, other hazards and parking provisions	6,000.
Total	\$23,459.
+ 6.5% CPI (Year 1)	\$24,984.

Second Year.

Construct Class I bikeway at Beattie Park	8,422.
Provide public bike racks	1,000.
Contingency factor where conversion of Class III to Class II system is warranted, where additions are desired up to 25% of existing Class II and Class III facilities	3,850.
Conversion of Ingram Park	4,000.
Total	\$17,272.
+ 13.0% CPI (from Year 1)	\$19,518.

Third Year

Construct information center at the Wye	\$16,000
Total	\$16,000
+ 19.5% CPI (from Year 1)	\$19,120

*Grand Total - 3 year plan \$63,622.

*Note: This figure does not include the cost of an information center to be constructed at the Central Avenue off-ramp of the proposed freeway bypass. Provision and actual costs would hinge upon the freeway's completion date.

D. Implementation Recommendations

The Community Development Department in conjunction with the Lompoc Bikeways Planning Committee recommends the following implementation program for the Lompoc Bikeways Plan:

1. That Santa Barbara County acquire an easement along the eastern edge of the proposed River Park project and develop a Class I bikeway connecting the Lompoc-Casmalia Road and bikeways north, with Highway 246 and bikeways south.
2. That the first year implementation of the bikeways plan be budgeted entirely from SB-325 funds and be completed in FY 74-75.
3. That the second year implementation of the plan be provided through SB-325 funds and general fund monies and that this second year phase be completed in FY 75-76.
4. That the third year implementation of the plan be accomplished through the use of similar funds and be completed in FY 76-77.

PART XI - ORDINANCE REVISIONS

In order to implement the initial bikeway plan for the City of Lompoc, some changes in existing ordinances should be made.

Subdivision Ordinance.

For ease of implementation in new developments, the street widths, right-of-way alignment and open space relationships of the Subdivision Ordinance should include the necessary standards provided in the bikeways plan. These standards should best represent those conditions of new development where bikeways are specified in the interim plan, and looking to the future, be applicable to those routes approved in the long range plan.

Zoning Ordinance.

The Zoning Ordinance will have its greatest effect on bikeways in the area of parking provisions within new community activity center development. The general parking space suggestions of the bikeway plan should be translated into specific zoning requirements.

General Plan.

As an element of the Transportation Element of the General Plan the provisions of the bikeway plan should be reflected in the transportation plan program as well as assisting in the land use portions of the General Plan. Bikeways may have a pronounced effect upon the shape of Lompoc in light of new developments in energy and fuel conditions which are affecting and may affect more conventional transportation in Lompoc.

City Bicycle Ordinance.

With new provisions both in State law and by providing new right-of-way development, the City of Lompoc will have to revise its ordinance regulating bicycle use. A highly compatible model ordinance is provided here for information. This ordinance is presently in force, with some variation, in the City of Davis, California.

Bicycles

CHAPTER 9.

BICYCLES.¹

Article I. In General.

- & 9-1. Definitions.
- & 9-2. Responsibility of parent.

Article II. Bicycle Licenses.

- & 9-20. Bicycle Licenses Required.
- & 9-21. Application; fee.
- & 9-22. Issuance; term; records.
- & 9-23. Renewal.
- & 9-24. Penalty for failure to obtain or renew.
- & 9-25. Issuance, attachment and removal of plates.
- & 9-26. Inspection of bicycles.
- & 9-27. Impoundment of unlicensed bicycles.
- & 9-28. Storage fees.

Article III. Bikeways.

- & 9-30. "Right hand side of roadway" defined.
- & 9-31. Establishment; signs.
- & 9-32. Riding on roadway adjacent to bikeway.
- & 9-33. Direction of travel.
- & 9-34. Leaving bikeway.
- & 9-35. Walking bicycles.
- & 9-36. Driving vehicles across bikeways.

Article IV. Bicycle Ownership.

- & 9-40. Transfer of ownership.
- & 9-41. Requirements imposed on rental agencies.

1. For state law as to operation of bicycles, see Veh. C., & 11100 et seq. As to authority of City to license and regulate the operation and equipment of bicycles, see Veh. C., & 21206

Article I. In General.

Sec. 9-1. Definitions.

For the purposes of this chapter, the following words and phrases shall have the meanings respectively ascribed to them by this section:

"Bicycle" is any device propelled by human power upon which any person may ride, having two or more wheels any of which is twelve (12) inches or more in diameter. For the purpose of this section, the original wheel size shall be used when defining a bicycle.

"Bikeway" is used to define all facilities that explicitly provide for bicycle travel. It can mean anything from fully grade separated facilities to simple signed streets. There are three classes of bikeways which are defined as follows:

- Class I: A completely separated right-of-way designated for the exclusive use of bicycles. Crossflows by pedestrians and motorists are minimized.
- Class II: A restricted right-of-way designated for the exclusive or semi-exclusive use of bicycles. Through-travel by motor vehicles or pedestrians is not allowed, however vehicle parking may be allowed. Cross-flows by motorists, for example to gain access to driveways or parking facilities, is allowed; pedestrian cross-flows, for example to gain access to parking facilities or associated land use is allowed.
- Class III: A shared right-of-way designated as such by signs placed on vertical posts or stencilled on the pavement. Any bikeway which shares its through traffic right-of-way with either or both moving (not parking) motor vehicles and pedestrians is considered a Class III bikeway.

Sec. 9-2. Responsibility of parent.

The parent of any minor or the guardian of any ward shall not authorize or knowingly permit any minor or ward to violate any of the provisions of this chapter.

Article II. Bicycle Licenses.

Sec. 9-20. Bicycle Licenses Required.

No person who has owned and possessed a bicycle within the city for a period of 30 days shall ride or propel the bicycle on any street or bikeway within the city unless such bicycle has been licensed and a license plate is attached thereto as provided in this article.

Sec. 9-21. Application; fee.

Application for a bicycle license shall be made upon a form provided by the city and shall be made to the chief of police. A fee of \$ shall be paid to the city before each license is granted.

Sec. 9-22. Issuance; term; records.

(a) The chief of police, upon receiving proper application therefore, is authorized to issue or renew bicycle licenses. The following rules apply to such issuance or renewal.

1. Any licenses shall expire on an August 31st.
2. Any license issued after any February 1st shall expire on the second succeeding August 31st.
3. The fee established for a license shall be readily divisible into six parts. The fee charged for a license shall be the equivalent of one-sixth of the fee for each quarter, or portion thereof, between the date of issuance and the date of expiration, except that the minimum fee charged shall be \$

(b) The chief of police shall not issue a license for any bicycle when he knows or has reasonable ground to believe that the applicant is not the owner of or entitled to the possession of the bicycle.

(c) The chief of police shall keep a record of the number of each license, the date issued, the name and address of the person to whom issued, the number on the frame of the bicycle for which issued and a record of all bicycle license fees collected by him.

Sec. 9-23. Renewal.

(a) Upon the expiration of any bicycle license a new or renewed license shall be obtained.

(b) Application for renewal of a bicycle license shall be made by the owner during a grace period between September 1 and November 1 succeeding the expiration date of the license.

Sec. 9-24. Penalty for failure to obtain or renew.

A penalty of % shall be added to the license fee if a bicycle owner fails to obtain a license as required by this chapter.

Sec. 9-25. Issuance, attachment and removal of plates.

(a) The chief of police, upon issuing a bicycle license, shall also issue a license plate bearing the license number assigned to the bicycle and the name of the city. The chief of police may provide for the transfer of the bicycle license.

(b) The chief of police shall cause such license plate to be firmly attached to the frame of the bicycle for which issued in such position as to be plainly visible from the rear.

(c) No person shall remove a license plate from a bicycle during the period for which issued, except in the event the bicycle is dismantled or no longer operated upon any street in this city.

(d) It shall be unlawful for any person to willfully or maliciously remove, destroy, mutilate or alter the number of any bicycle frame. It shall also be unlawful for any person to remove, destroy, mutilate or alter any license plate during the time in which such license plate is operative. Provided, however, that nothing in this title shall prohibit the Police Department from stamping numbers on the frames of bicycles on which no serial number can be found, or on which said number is illegible or insufficient for identification.

Sec. 9-26. Inspection of bicycles.

The chief of police shall inspect each bicycle before licensing the same and shall refuse a license for any bicycle which he determines is in unsafe mechanical condition.

Sec. 9-27. Impoundment of unlicensed bicycles.

A bicycle parked or left standing in a public place, which bears no city license, may be impounded until such time as the owner purchases any required bicycle license.

Sec. 9-28. Storage fees.

The failure of an owner to claim a bicycle within seven days after notification of storage by the police department will result in the charging of twenty five cents per day storage fee. The fee shall not be charged for the first seven days of storage.

Article III. Bikeways.

Sec. 9-30. "Right hand side of roadway" defined.

If a bikeway is separated from the traffic lane by a parking lane, then the edge of the bikeway nearest the center of the roadway shall be deemed the equivalent of the "curb" or the "right hand side of the roadway" or the "shoulder of the roadway" or any other word or phrase in this Code, or in the State law, which word or phrase references the extreme right hand side of the roadway. It is the intent of this section that a substitute right hand side of the roadway be created for purposes of compliance with local or state laws which reference the right hand side of the roadway or such similar term for parking, emergency parking, driving or other similar purposes.

Sec. 9-31. Establishment; signs.

The City Council, by adoption of a bikeways plan for the City of Lompoc authorizes the city engineer to erect, construct or otherwise establish the city bikeways in accordance with the adopted bikeways plan. The city engineer is hereby authorized to establish, erect or place signs or pavement markers upon any street, adjacent to any street, or on other public land or facility within the city indicating the existence of a bikeway and otherwise regulating the operation and use of vehicles and bicycles with respect thereto, so long as such a sign or marking is consistent with this chapter and the adopted bikeways plan. Before such a sign is erected, the subject bikeway shall be designated on such street by appropriate painting and/or street markings or other manner as specified in the bikeways plan or by the city engineer relative to the public safety when such designation by the city engineer is consistent with the intent and meaning of the adopted bikeways plan. When such signs or markings are in place, no person shall disobey them.

Sec. 9-32. Riding on roadway adjacent to bikeway.

No person shall ride or operate a bicycle upon a roadway adjacent to which or upon which a bikeway has been designated except within such a bikeway or except as otherwise permitted by the provisions of this chapter.

Sec. 9-33. Direction of travel.

No person shall ride or operate a bicycle within a bikeway in any direction except that permitted of vehicular traffic traveling on the same side of the roadway; provided, that bicycles may proceed either way along a bikeway where arrows appear on the surface of the bikeway designating two-way traffic.

Sec. 9-34. Leaving bikeway.

Once having entered a bikeway, no person operating a bicycle shall leave such bikeway except at intersections; provided, that such person may leave a bikeway upon dismounting from a bicycle, walking the same, and being subject then to all laws applicable to pedestrians; provided further, that such person may leave the bikeway between intersections in order to make a left turn or a U-turn where such a turn is permissible for vehicular traffic, or to turn into driveways on the right or left hand side of the bikeway. Upon leaving a bikeway, the rider or operator of such bicycle shall yield the right-of-way to all vehicles and shall not leave the bikeway until it is safe to do so.

Sec. 9-35. Walking bicycles.

Bicycles may be walked subject to all provisions of laws applicable to pedestrians.

Sec. 9-36. Driving vehicles across bikeways.

No person shall drive a vehicle upon or across a bikeway except to enter a driveway or to park such vehicle or leave a parking space. No person shall drive upon or across a bikeway as permitted by this section except after giving the right-of-way to all bicycles within the bikeway.

Article IV. Bicycle Ownership.

Sec. 9-40. Transfer of ownership.

It shall be the duty of every person who transfers ownership of any bicycle to report such transfer by returning to the police department the license issued to such person as licensee thereof, together with the name and address of the person to whom said bicycle was transferred, and such report shall be made within ten (10) days of the date of said transfer. It shall be the duty of the transferee of such a bicycle to apply for a transfer of license thereof within thirty (30) days of said transfer.

Sec. 9-41. Requirements imposed on rental agencies.

Any person operating a rental agency shall not rent or offer any bicycle for rent unless the bicycle is licensed and a license plate is attached thereto as provided in this chapter and such bicycle is equipped with the lamps and other equipment required by State Vehicle Code.

Sec. 1-10. Transfer of membership

Any member of the corporation may transfer his or her membership in the corporation to any other person, provided that the transferee is a natural person who is at least 18 years of age and is a resident of the State of New York. The transfer of membership shall be subject to the approval of the Board of Directors of the corporation. The transferee shall be deemed to have accepted the membership upon the date of the transfer.

Sec. 1-11. Corporation not bound on behalf of members

The corporation shall not be bound by any contract or obligation entered into by any member of the corporation, whether or not the contract or obligation is made in connection with the membership of the member in the corporation.

The corporation shall not be bound by any contract or obligation entered into by any member of the corporation, whether or not the contract or obligation is made in connection with the membership of the member in the corporation.

PART XII - APPENDIX

Survey I - City Wide Survey Summary.

Survey I was derived from a short questionnaire sent to 8,500 families through the monthly utility billing for the City of Lompoc in November of 1973. 1,800 surveys were returned, of which 1,000 were used for survey purposes. Below are listed a few facts about bicycle use in Lompoc and the survey findings.

1. Respondents to the survey ranged in age from 17 to 89 years with an average of 39 years of age.
2. The average age of bicycle riders between the ages of 17 and 89 was not obtained, but the largest segment was from 25 to 40 years. People under 17 years were eliminated from the curve as no school survey was done.
3. The average income of all respondents was \$12,800 with an annual average adjusted buying power of \$9,140. The average income of the bicycle riders was \$12,250 and a buying power of \$8,980.
4. Of 2,986 people accounted for, there were 863 riders or 28.9% of all persons accounted for were riding more than once a month.
5. Use of bicycles by income groups showed no particular correlations in the initial analysis, but further study will be given this and many other relationships for the long range plan.

The following chart shows the frequency of trips by the riders surveyed and has a city wide estimate of trips based on the 1970 census, SCOTS preliminary transportation data, and the survey itself.

TRIPS GENERATED AS OF NOVEMBER, 1973

	<u>Total Riders</u>	<u>Ride Daily</u>	<u>Weekly</u>	<u>Monthly</u>
Daily	178	556	3,892	16,911
Weekly	390	251	1,757	7,614
Monthly	295	159	1,121	4,859
Total in Survey	863	966	6,770	29,384
Total City After Adjustment for Socio-Economic Factors	4,518	3,617	21,393	83,651

Note: In neighborhood or "on the block" trips are not accounted for in this survey tabulation.

The major streets used by bicycle riders in the survey are as follows:

<u>STREET NAME</u>	<u>% OF RIDERS SURVEYED</u>	<u>ON THE BACKBONE PLAN</u>
1. Ocean Avenue	10.5%	Part
2. "H" Street	9.4%	No
3. "A" Street	9.0%	Yes
4. College Avenue	8.6%	Yes
5. Pine Avenue	6.0%	No
6. "O" Street	5.0%	Yes
7. North Avenue	4.9%	Yes
8. Olive Avenue	4.3%	Yes
9. Walnut Avenue	4.1%	Yes
10. Cypress Avenue	4.1%	Yes
11. Seventh Street	3.1%	Part
12. Third Street	3.1%	No
13. "I" Street	3.1%	Yes
14. Chestnut Avenue	2.5%	No
15. Laurel Avenue	2.3%	No
16. "V" Street	2.1%	No
17. Locust Avenue	1.7%	No
18. "G" Street	1.3%	Yes
19. "F" Street	1.2%	No
20. "P" Street	1.2%	No

Note: No daily, weekly or monthly trip volume has yet been established for the above streets. The tabulation represents only the people who chose these streets as streets most often used.

Rider purposes were given in the survey as follows:

<u>TRIP PURPOSE</u>	<u>% OR RIDERS RESPONDING</u>
Touring	11.01%
Recreation	54.23%
Exercise	61.76%
Work	14.25%
Shopping	22.02%
School	13.30%
General Transportation	14.14%
Save Time	6.37%
Save Money	22.60%
Environmental Reasons	21.55%
Other Reasons	4.63%

While recreation and exercise purposes are generally the most common reasons for riding, a large minority are using bicycles for utility purposes. An amazing 14% said they used the bicycle for general transportation.

Inhibiting factors or reasons people gave for not riding or not riding more often were recorded as follows:

INHIBITING FACTOR% OF RESPONDENTS

Too much effort	9.7%
Social Pressure (ridicule, dress, etc.)	3.6%
Stopping and starting	3.9%
Can't carry packages	26.1%
Afraid of bicycle theft	27.6%
Not enough bike racks	21.9%
Fear of personal injury	28.5%
Wind and bad weather	31.9%
Lack of time	13.1%
Other reasons including age, physical condition, lack of showers at destin- ation, etc.	26.3%

From the above tabulation it is felt that by implementation of the bike plan, the largest problems of theft and injury could be lessened significantly. The problems of wind and weather are beyond our control, but physical conditioning and the ability to carry packages can be greatly enhanced with personal effort and ingenuity or bicycle accessories.

The desirability of bikeways was greatly felt by the survey respondents.

<u>Total Surveyed</u>	<u>Yes</u>	<u>% Yes</u>	<u>No</u>	<u>% No</u>	<u>Don't Know</u>	<u>% Don't Know</u>
1,000	838	83.8	108	10.8	54	5.4

The willingness of people to allow the spending of public funds was also surveyed and tested in a similar manner.

<u>Total Surveyed</u>	<u>Yes</u>	<u>% Yes</u>	<u>No</u>	<u>% No</u>	<u>Don't Know</u>	<u>% Don't Know</u>
1,000	820	82.0	121	12.1	59	5.9

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